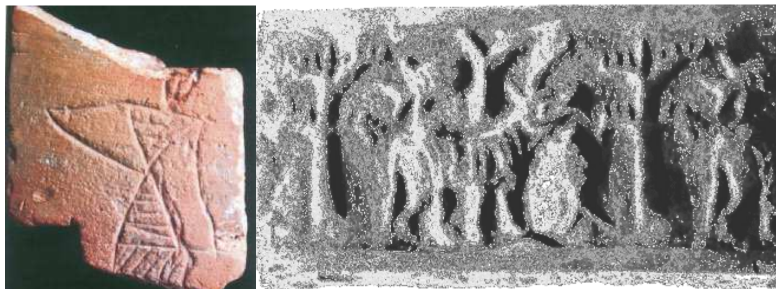
Decoding Indus script

Mleccha, mlecchita vikalpa in Sarasvati hieroglyphs



1.Potsherd from Bhirrana showing dance
2.Tree in front. Fish in front of and above a one-horned bull. Cylinder seal impression (IM 8028), Ur, Mesopotamia. White shell. 1.7 cm. High, dia. 0.9 cm. [Cf. T.C. Mitchell, 1986, Indus and Gulf type seals from Ur in: Shaikha Haya Ali Al Khalifa and Michael Rice, 1986, *Bahrain through the ages: the archaeology*, London: 280-1, no.8 and fig. 112].

S. Kalyanaraman
http://sites.google.com/site/kalyan97
26 Feb. 2009

Indus script decoded

Gen. Alexander Cunningham, had discovered in 1875, the first known Indus seal (British Museum 1892-12-10, 1) at Harappa. For the last 134 years, scholars have been trying to decipher the writing system on about 4000 such seals and objects with inscriptions.

Dr. S. Kalyanaraman, Director of Sarasvati Research Centre makes a historic announcement in a lecture at Rojah Muthiah Library, Chennai on his decoding of the writing system of Indus script. His 30 years of research have led him to conclude that the writing system was composed of graphics (like picture writing) read rebus. (Rebus means similar sounding words which can be represented by pictures – for example, words which actually represent mine workers' and metal smiths' possessions of furnaces and smelters, minerals, metals and alloys they created for trade.) The Vedic Sarasvati River Basin close to Khetri and Zawar mines of Rajasthan had 80% of the ancient settlements of the speakers of ancient versions of present-day Indian languages. Many of these settlements also yielded objects—such as seals, seal impressions, copper plates, weapons and metal tools-- containing the writing system.

The major finding is that the ancestors of the present-day speakers of all Indian languages -- Aryan, Dravidian, Munda languages -- were living together in what scholars call a 'linguistic area' – an area where speakers of different dialects borrow language features from one another and make the features part of their own dialects. This path-breaking finding also explains the reason why over 30% of agricultural words in Indian languages do not have any links with Indo-European languages and why over 40% of the words used in early Vedic and Sanskrit texts contain many word borrowed from Dravidian and Munda Similarly, the metallurgical words used by miners and smiths also are unique to the community of Indian languages showing an indigenous formation and evolution of early metallurgical techniques and related language words.

The finding is also significant because the invention of early metals and techniques of alloying and trade in the metal artefacts necessitated the invention of a writing system. The symbols used are referred to as Sarasvati hieroglyphs including pictures of many animals – markhor, ibex, goat, elephant, tiger, rhinoceros, gharial (crocodile), buffalo, zebu, ox, heifer, fishes, archer – and also graphics derived from objects such as: rim of jar, rimless pot, rice plant sprout, comb, harrow, ficus leaf. All these glyphs have been read rebus and shown to relate to miners' and smiths' professional repertoire, thus the inscriptions were effective calling cards of these artisans. There is also a sign-board which once adorned the gate of the fort of Dholavira about 4500 years ago and contained 10 glyphs to communicate the message of the workshop of smiths offering many metallurgical services such as metal casting and forging. This constitutes the earliest advertisement hoarding in civilization history of a huge size: each sign is 37 cm. high and 25 to 27 cm. wide and made of white mother-of-pearl.

The language was called mleccha in ancient Indian texts and called meluhha in Mesopotamian texts. It is significant that milakkhu in Pali language and mlecchamukha in Sanskrit both mean 'copper' confirming the fact that the language-speakers of mleccha were metal workers.

The implications of the conclusive decoding of the writing system are that the Aryan Invasion/Migration theories are myths since the languages of India had evolved indigenously with intense interactions among ancient versions of present-day languages of the nation. Those who theorise about Indo-European homeland have to rework on their theses. The findings prove an essential cultural unity among Indian languages founded on a continuing culture which emerged on the Vedic Sarasvati river basin.



For example, a pectoral (steatite pendant ornament) with glyphs is decoded: one-horned heifer, with pannier and an overflowing pot and explains the meanings: copper smith's metal casting workshop, furnace of miner (kod 'workshop'; rebus reading kod 'horn'); (kamarsaala, rebus reading of kammarsaala 'pannier'); (kand kanka 'rim of jar'; rebus: miner's furnace); (ere 'casting metal'; rebus: ere 'overflowing'). In front of the ligatured

animal is a standard device. It is sangada 'lathe', 'portable furnace'; rebus reading: sangataraasu 'stone-cutter'. The lapidaries' work has yielded exquisite ornaments made of carnelian, agate, lapis lazuli and other semi-precious stones. The trough shown in front of many animals is read as 'pattar' which also means 'guild of goldsmiths'.

"Nobody ever notices a postman, somehow," said Chesterton's detective Father Brown

"One of GK Chesterton's *Father Brown* detective stories is about a postman who walked into a block of flats, murdered one of the residents, and carried out the corpse in his sack without so much as rousing the suspicion of the commissionaire who stood on duty. 'Nobody ever notices postmen, somehow,' said Father Brown, and he echoed the paradox that Chesterton repeatedly expounded: the most familiar things can go by most easily unnoticed. Indeed, the paradox itself has now become sufficiently self evident to be regarded rather as a truism. We have become so familiar with the modern use of metals that we tend to accept it – like Father Brown's postman – fairly thoughtlessly….

Like the postman in *Father Brown*, the linguistic area of Bharat, circa 5500 years Before Present, has gone unnoticed simply because it is all around us, as a dialectical continuum stretching from Kanyakumari to Kashmir, from Dholavira to Dacca. The prehistory of the civilization is also all around us emphasizing the cultural continuity for over 5500 years to the present day. We only have to research further to delineate the ancient dialects of the *lingua franca* proto-mleccha and proto-vedic in Indian linguistic area using Language X proto-Munda and proto-Dravidian glosses.

26 Feb. 2009

Mleccha, mlecchita vikalpa in Sarasvati hieroglyphs (Decoding Indus script as a writing system)

S. Kalyanaraman, Sarasvati Research Centre, kalyan97@gmail.com
26 February 2009

Abstract

Indus Script is decoded as sarasvati hieroglyphs composed of all pictorial motifs -- over 100 -- and signs -- over 400 – and read rebus in mleccha vācas (as distinct from arya vācas -- Manu). The context is: miners' and smiths' repertoire (not unlike the viśwakarma working on utsava bera in Swamimalai following the *cire perdue* technique of Sarasvati civilization bronzes or asur/agaria working in iron ore smelters in Ganga basin of 18th century BCE).

Sarasvati hieroglyphs are in mleccha, mlecchita vikalpa (Vātsyāyana). Hypothesis posited: Language X + Proto-Munda = Proto-mleccha (with borrowings in Sarasvati Linguistic Area).

Rebus readings of almost all glyphs (pictorial motifs as well as signs) relate to mine workers’ and metalsmiths’ repertoire. The writing system is a vikalpa (alternative representation) of their vernacular, mleccha, cognate: meluhha. Presented in 15 e-books at http://sites.google.com/site/kalyan97

In view of the essentially pictographic nature of the writing system, the presentation is made in three parts:

1. monograph on vernacular (deśī), the linguistic area and the continuity of proto-mleccha vernacular; structure and semantics of hieroglyphs of mlecchita vikalpa, the decoded writing system;
2. powerpoint slides with selected glyphs and readings; and
3. Epigraphica Sarasvati of about 4000 inscribed epigraphs on photo albums.

Two fundamental questions should be researched further: 1. the continuity of the civilization evidenced by cultural markers all over India and the neighbouring regions; 2. the formation and evolution of languages in a linguistic area of the Sarasvati civilization continuum in India, proved by the decoding of the Indus script (Sarasvati hieroglyphs) See http://sites.google.com/site/kalyan97

Ancient India linguistic area

This is a tribute to श्री Mahadevan, Parpola and scholars of Indian civilization studies

This is पितृऋण M. ऋण [ṛṇa] *n* (S) Debt. Three departments of man's debt are reckoned, viz. देवऋण, ऋषिऋण, पितृऋण, q. v. This is thus a homage to पितृ who have given us a

civilization under dharma or அறம் aṟam , *n*. < அறு¹-. [K. *aṟa*, M. ***aṟam***.] 1. Moral or religious duty, virtue, performance of good works according to the Šāstras, duties to be practiced. அறு -தல் aṟu- : notes with another;

தானறிந்ததைப் பிறனறிவோடு ஒப்புநோக்கக் கேட் குங்கேள்வி. (நன். 385, விருத்.)

- Most of the ca. 500+ glyphs and glyptic elements have been identified with precision (without ambiguity) thanks to the brilliant work done by Mahadevan, Parpola and other scholars who have contributed to unraveling the orthography and structure of the writing system
- Each glyph is a potential resource for relating the glyph to glosses of Indian languages to identify mleccha glosses
- Glyptic semantic structures result in decoding of the writing system using the simple rebus method (rebus: A representation of words in the form of pictures or symbols, often presented as a puzzle. From Latin *rebus*, ablative pl. of *res*, thing. – bartleby.com) and relating them to one semantic category: early workings in mines, early workings with minerals and metals.

Corpus web album: http://sites.google.com/site/kalyan97/epigraphica-sarasvati

Hypothesis posited: Language 'X' + Proto-Munda = Proto-mleccha (deśa bhāṣā) (with borrowings in Sarasvati Linguistic Area).

- Mlecchita vikalpa: Vātsyāyana 'cypher writing'

- *mleccha vācas* distinguished from ā*rya vācas* (*lingua franca* or deśi distinguished from literary Sanskrit) (Manu 10.45):

  mukhabāhurūpajjānām yā loke jātayo bahih
  mlecchavācaś cāryavācas te sarve dasyuvah smṛtāh

- "All those people of the world which are excluded from the (community of) those born from the mouth, the arms, the thighs and the feet (of Brahman) are called Dasyu, whether they speak the language of the mleccha or that of the aarya." (Buhler). Alt. Mleccha dialect speakers and ārya dialect speakers are all remembered as dasyu. Thus, it is clear that there were two dialects in the linguistic area: mleccha vācas and ārya vācas.

- Proto-Munda continuity and Language X

- F.B.J. Kuiper, 1948, *Proto-Munda Words in Sanskrit*, Amsterdam, Verhandeling der Koninklijke Nederlandsche Akademie Van Wetenschappen, Afd. Letterkunde, Nieuwe Reeks Deel Li, No. 3, 1948 http://www.scribd.com/doc/12238039/mundalexemesinsanskrit

- Language 'X' to explain a large number of agriculture-related words with no IE cognates: Colin Masica, 1991, *Indo-Aryan Languages*, Cambridge Univ. Press

Mleccha, *lingua franca* (deśī -- vernacular)

> " a very considerable amount (say some 40%) of the New Indo-Aryan vocabulary is borrowed from Munda, either via Sanskrit (and Prakrit), or via Prakrit alone, or directly from Munda; wide-branched and seemingly native, word-families of South Dravidian are of Proto-Munda origin; in Vedic and later Sanskrit, the words adopted have often been Aryanized, resp. Sanskritized.In view of the intensive interrelations between Dravidian, Munda and Aryan dating from pre-Vedic times even individual etymological questions will often have to be approached from a Pan-Indic point of view if their study is to be fruitful. It is hoped that this work may be helpful to arrive at this all-embracing view of the Indian languages, which is the final goal of these studies." (p. 9) (FBJ Kuiper, opcit., 1948)

Language X

- Sources of OIA agricultural vocabulary (based on Masica 1979) Percentage
    - IE/IIr 40%
    - Drav 13%
    - Munda 11%
    - Other 2%
    - Unknown 34%
    - Total 100%
- Hence, a Language X is postulated

Cultural continuity of Sarasvati Civilization in India

- Since there is cultural continuity in India from the days of Sarasvati civilization, it is possible to reconstruct Language X by identifying isoglosses in the linguistic area.
- Continued use of śankha (turbinella pyrum) bangles which tradition began 6500 BCE at Nausharo;
- Continued wearing of sindhur at the parting of the hair by married ladies as evidenced by two terracotta toys painted black on the hair, painted golden on the jewelry and painted red to show sindhur at the parting of the hair;
- Finds of śivalinga in situ in a worshipful state in Harappa (a metaphor of Mt. Kailas summit where Maheśvara is in tapas, according to Hindu tradition);
- Terracotta toys of Harappa and Mohenjodaro showing Namaste postures and yogāsana postures;
- Three-ring ear-cleaning toiletry device

Language and culture as intertwined, continuing legacies

- Legacy of architectural forms

- Legacy of puṣkariṇi in front of mandirams; as in front of Mohenjodaro stupa
- Legacy of metallurgy and the writing system on punch-marked coins
- Legacy of continued use of *cire perdue* technique for making utsava bera (bronze murti)
- Legacy of the writing system on Sohgaura copper plate
- Legacy of glyphs continuing on aṣṭamangalahāra
- Legacy of the writing system on Bharhut ligatures
- Legacy: śrivatsa glyph metaphor; śrivatsa and śrisuktam
- Legacy: Engraved celt tool of Sembiyan-kandiyur with Sarasvati hieroglyphs: calling-card of an artisan
- Legacy of acharya wearing uttariyam leaving right-shoulder bare
- Form of addressing a person respectfully as: arya, ayya (Ravana is also referred to as arya in the Great Epic Ramayana)
- Gautama the Buddha refers to *eṣa dhammo sanantano;* Mahavira refers to *'ariya' dhamma* (arya meaning 'right conduct, respectful')

Cultural continuum justifies search for mleccha glosses from ancient forms of words of the linguistic area

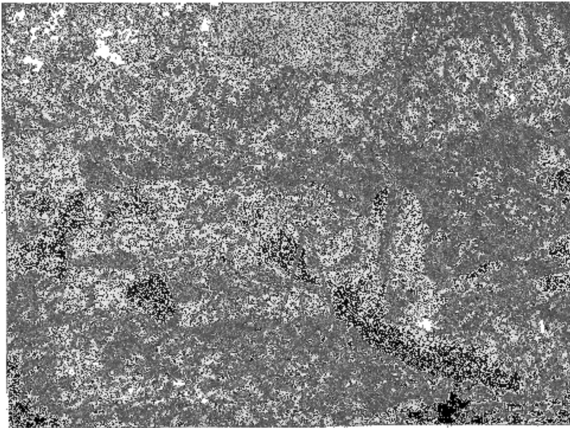


Bronze murti: *cire perdue* technique used today in Swamimalai to make bronze utsavabera.

Eraka Subrahmanya is the presiding divinity in Swamimalai. Eraka! Copper.

Devices on punch-marked coins comparable to Sarasvati hieroglyphs

Plate X [c] Lingam in situ in Trench Ai (MS Vats, 1940, *Excavations at Harappa*, Vol. II, Calcutta) Lingam, grey sandstone in situ, Harappa, Trench Ai, Mound F, Pl. X (c) (After Vats). "In an earthenware jar, No. 12414, recovered from Mound F, Trench IV, Square I... in this jar, six lingams were found along with some tiny pieces of shell, a unicorn seal, an oblong grey sandstone block with polished surface, five stone pestles, a stone palette, and a block of chalcedony..." (Vats, EH, p. 370).



dvādaśa jyotirliṅga stotram:

kāverikānarmadayoḥ pavitre

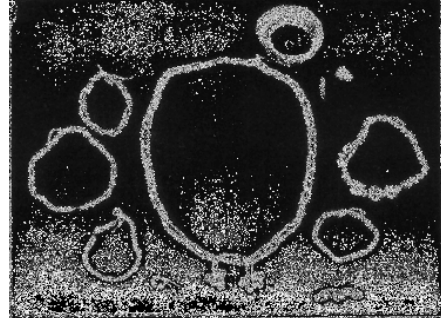
samāgame sajjanatāraṇāya | sadaiva

māndhātripure vasantamoṅkāramīśaṃ

śivamekamīḍe ||

Trans. I pay my obeisance to the One Who is the savior of the good people and the great One Who always resides at the Holy

merging point of Kaveri and Narmada, i.e., Omkar Shiva.



King śibi was called Sembiyan. Sembiyan is a popular title assumed by a number of Chola kings. Some claim that Sembiyan denotes a descendant of śibi. Mutalvaḷḷalkaḷ are liberal chiefs offering boundless bounty and are seven: cempiyan, kari- or cakari (according to *āciriya nikaṇṭu*), viratan, niruti, tuntumaari, cakaran, nalan.

Sembiyan Mahadevi was the grandmother of Rajaraja Chola I. She was widowed circa 958 CE.



Plate X [c] Lingam in situ in Trench Ai (MS Vats, 1940, Excavations at Harappa, Vol. II, Calcutta): 'In the adjoining Trench Ai, 5 ft. 6 in. below the surface, was found a stone lingam [Since then I have found two stone lingams of a larger size from Trenches III and IV in this mound. Both of them are smoothed all over]. It measures 11 in. high and 7 3/8 in. diameter at the base and is rough all over.' (Vol. I, pp. 51-52) Mt. Kailas (Manasa Sarovar), Himalayas

6500 BCE. Date of the woman's burial with ornaments including a wide bangle of shankha. Mehergarh. Burial ornaments made of shell and stone disc beads, and *turbinella pyrum* (sacred conch, s'an:kha) bangle, Tomb MR3T.21, Mehrgarh, Period 1A, ca. 6500 BCE. The nearest source for this shell is Makran coast near Karachi, 500 km. South. [After Fig. 2.10 in Kenoyer, 1998].

śankha wide bangle and other ornaments, c. 6500 BCE (burial of a woman at Nausharo)

śankha, *turbinella pyrum* a signature tune of Hindu civilization; a species which occurs only in Hindumahasagar coastline

śankha kṛśāna (Rigveda, Atharvaveda) – śankha bowman, śankha cutter
A continuing, 8500 year-old industry

At Tiruchendur (kīṟakkarai, Gulf of Mannar), WB Handicrafts Dev. Corpn. has an office; annual turnover of śankha obtained: Rs. 50 crores.

Seal, Bet Dwaraka 20 x 18 mm of conch shell
Wide bangle made from a single conch shell and carved with a chevron motif, Harappa; marine shell, *Turbinella pyrum* (After Fig. 7.44, Kenoyer, 1998) National Museum, Karachi. 54.3554. HM 13828.
Seven shell bangles from burial of an elderly woman, Harappa; worn on the left arm; three on the upper arm and four on the forearm; 6.3 X 5.7 cm to 8x9 cm marine shell, *Turbinella pyrum* (After Fig. 7.43, Kenoyer, 1998) Harappa museum. H87-635 to 637; 676 to 679.
Modern lady from Kutch, wearing shell-bangles.



Nausharo: female figurines. Wearing sindhur at the parting of the hair. Hair painted black, ornaments golden and sindhur red. Period 1B, 2800 – 2600 BCE. 11.6 x 30.9 cm.[After Fig. 2.19, Kenoyer, 1998].





Toilet gadgets: Ur and Harappa
After Woolley 1934, Vats 1941









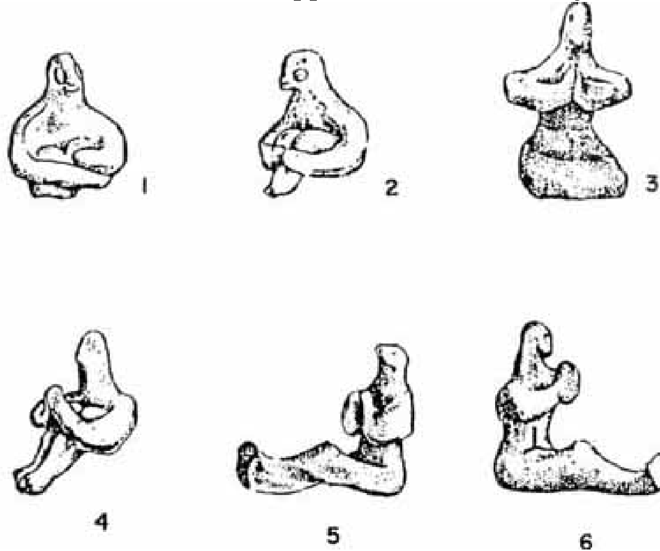






Terracotta toys show yogic asanas: 1-4, from Harappa; 5-6, from Mohenjo-daro





There is evidene from an Akkadian cylinder seal that the language of the civilization area was Meluhha (cognate: mleccha in Skt. Milakkhu in Pali).



The Meluhhan being introduced carries an antelope on his arm. Cylinder seal Impression. Akkadian. Inscription records that it belongs to 'śu-iliśu, Meluhha interpreter'. Musee du Louvre. Ao 22 310, Collection De Clercq.

'In a letter dated 16 May 1990, Dr. Dominique Collon comments on the iconography as follows: 'The seal depicts a seated figure, identifiable by her long hair as feminine and by her horned head-dress (chipped) as a deity. The flounced robe is also generally an indication of divinity. The child on her lap could be the owner of the seal but is more likely to be an attributor of the godess. The figures approaching the godess are probably the owner of the seal and his wife although it is possible that these are priestly figures. Several centuries later, in Old Babylonian times, it is the king who almost always carries the animal offering but he is probably seeking favourable omens and the deities he approaches are ther particularly connected with omens (see Collon 1986: III.37). On these later, Old Babylonian seals, the figure carrying a situla or bucket is generally a priest but here it is clearly a woman and there is nothing to indicate that she is a priestess of a queen. Both wear Akkadian dress and nothing distinguishes them as foreigners. The significance of the kneeling male figure and the pots behind is difficult to interpret: they could be an attribute of the godess, and the large pots on stands are used even today for water – perhaps an additional reference to the godess' fertility aspect. Among the seals illustrated by R.M. Boehmer (1965) seals 549 and 555 make clear that some sort of drink

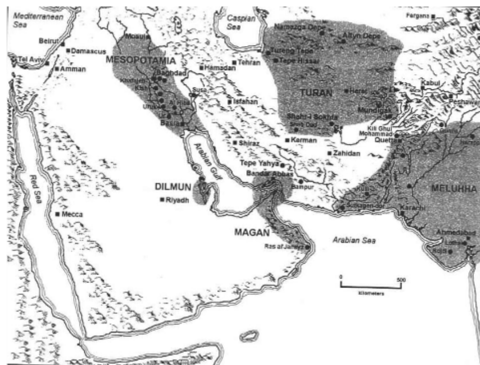
is involved. Boehmer's plate 47 shows that the scene belongs to a well-established iconographical group and was not specifically created for the Meluhha interpreter – indeed it was probably chosen from a range of ready-cut seals in a seal-cutter's workshop and the inscription was added. This would account for the fact that the figures overlap the inscription frame on both sides. Boehmer attributes the seal to Akkadisch III period – i.e. from Naramsin onwards." [cf. Parpola, 1994, fig. 8.4]

An Akkadian seal (after Powell, p. 390: *The Bronze Age Civilization of Central Asia*, New York, 1980) shows the translator of the Meluhhan (Sindhu Sarasvati) language (EME.BAL.ME.LUH.HA.KI) is received by a person of high rank and sitting by his lap. Another Meluhhan sitting by three jars makes a greeting gesture. Two persons enter: one carries an animal, the other a purse. British Museum tablet #79987 enumerates a 'man of Meluhha' named (...)-ibra in a list of foes of Naram-Sin, King of Akkad, ca. 2250 BCE. "During the second half of the 3rd millennium BC, textual sources frequently refer to trade with Dilmun, Magan and Meluhha. Dilmun is known to be the island of Bahrain, Magan is probably present-day Makran and the territory opposite it in Oman, while at this period it seems that Meluhha referred to the Indus Valley where the flourishing cities of Mohenjo Daro and Harappa have been excavated. The Indus Valley civilisation used square stamp seals but under the impetus of trade some cylinder seals appear and a Meluhhan interpreter used a typical Akkadian seal." (Collon, 1987)

An attempt to unravel the language spoken by the Meluhhan on this cylinder seal has been made, through a number of sources. Proceeding on the assumption that Meluhha as seen from Mesopotamia was the Sapta-Sindhu region of Bhārata, one such source is the compilation of a lexicon based on sememes from the ancient versions of present-day languages of Bhārata. Another source is the application of many lexemes from this lexicon using the rebus method to many glyphs of the inscribed objects from Meluhha of the period, ca. 2250 BCE.

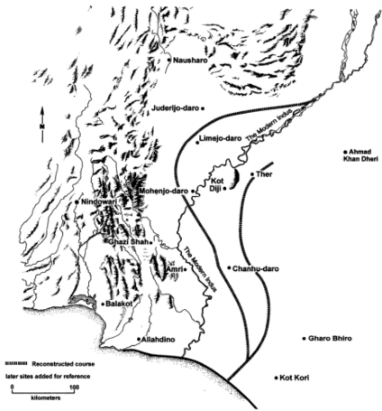
It appears that the 'antelope' or 'ram' shown on the back of the Meluhhan is a homonym for a semantic determinant connoting the nature of his profession, the helper of a merchant. mṛeka 'goat' (Telugu); mlekh 'goat' (Brahui). He is from Meluhha, copper-region. [mlecchamukha 'copper' (Skt.); milakkhu 'copper' (Pali)]

Meluhha



With this view of cultural continuity in India from the days of Sarasvati civilization, the locus of Meluhha can be seen as sapta sindhu region (land of 7 rivers) mentioned in the Rigveda.

Western Asia showing Mesopotamia, Turan, Dilmun, Magan and Meluhha. See Steinkeller 1984, 265 (Fig. 2)



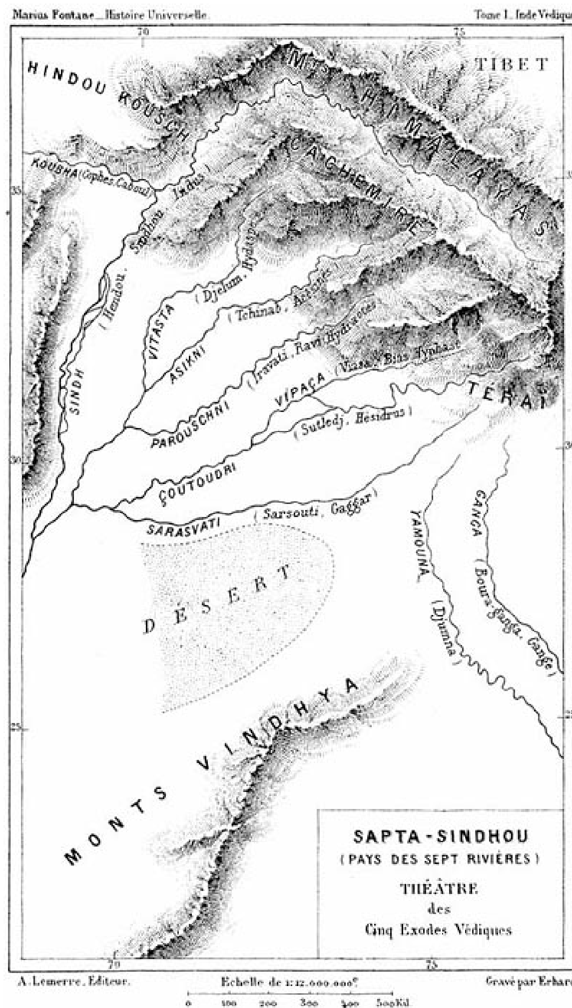
An estimate of the course of the Sindhu river during the Civilization era (After Fig. 1.4 G. Possehl, 2002, *The Indus civilization: a contemporary perspective,* Rowman Altamira)



Bronze female figurine from Shahr-i Shokta (After Tosi 1983).

Hermeneutics and Sarasvati hieroglyphs

Hermeneutics is the science of discovering new meanings and interpretations in 'all those situations in which we encounter meanings that are not immediately understandable but require interpretive effort' (Gadamer 1976: xii). Gadamer, Hans-Georg. 1976, *Philosophical Hermeneutics,* ed. and trans. by David E. Linge, Berkeley: University of California Press. Such an interpretive effort has led to the decoding of Sarasvati hieroglyphs as the repertoire of miners and metalsmiths of the civilization in a linguistic area. The ancient words read rebus can be traced in many Bharatiya languages as borrowings from mleccha (Language X + proto-Munda).



Sarasvati hieroglyphs comprise of over 100 pictorial motifs and over 400 signs. Almost all glyphs are remarkably precise including those glyphs which are referred to as geometric designs or dotted circles or svastika or ligatured composite animals or ligatured signs. This monograph explores the continuity of this hieroglyph tradition into the historical periods in India consistent with other cultural markers which continue in Hindu civilization traditions (markers such as worship of śivalinga, wearing of śankha bangles, wearing of sindhur in the parting of the hair, continued use of cire perdue technique for casting bronze murti-s, wearing of uttarīyam comparable to the garment worn by the 'priest', yogic postures, postures of sitting in penance).

Map of Sapta Sindhu (Nation of Seven Rivers): Theatre of Pan~cajana_h,Five Peoples Marius Fontane, 1881, *Histoire Universelle, Inde Vedique* (de 1800 a 800

TABLE 1 [Possehl, Gregory L. and Gullapalli, Praveena, 1999]
RADIOMETRIC DATES FOR MEGALITHIC IRON IN PENNINSULAR INDIA

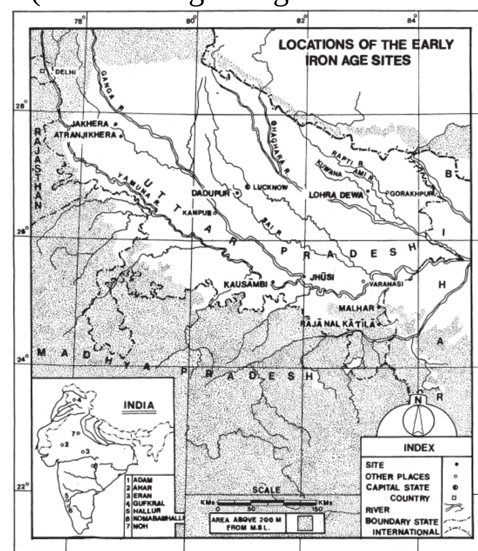
SITE AND PERIOD	LAB NO.	CALIBRATED DATE BC/AD (1δ CAL) (CALIB-3 PROGRAM)
RADIOCARBON DATES		
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] CALIBRATED DATE BC

av. J.C.), Alphonse Lemerre, Editeur, Paris.

The hieroglyph tradition continues most pronouncedly in the tradition of punch-marked and cast coins from circa 1000 BCE. Some glyptic styles are also evident in Begram ivories and on the sculptures of Bharhut and Sanchi stupas and other architectural monuments. Ref.

http://www.scribd.com/doc/11114439/Ancient-Hieroglyphs

This continuity established in the arrays of evidence adduced in this monograph lead to one hint – that the words associated with the glyphs (and meanings assigned to homonyms in the context of metalsmiths' and miners' repertoire) in desa bhaashaa are a continuum of the mleccha (meluhha) – the spoken, ungrammatical vernaculars as distinct from arya bhāṣā which was a literary tongue with strict adherence to grammatical rules.



The continuity of the Sarasvati civilization into the historical periods has profound implications with particular reference to language evolution. The mleccha words are likely to have been borrowed into the languages and dialects spoken in the interaction areas of the civilization which extended fully along the Vedic River Sarasvati basin. There are indications that Munda-speakers moved towards the Ganga river basin as the smelting of iron ore began circa 18th

century BCE. The area of Munda-speakers is virtually coterminus with the bronze age civilization sites.

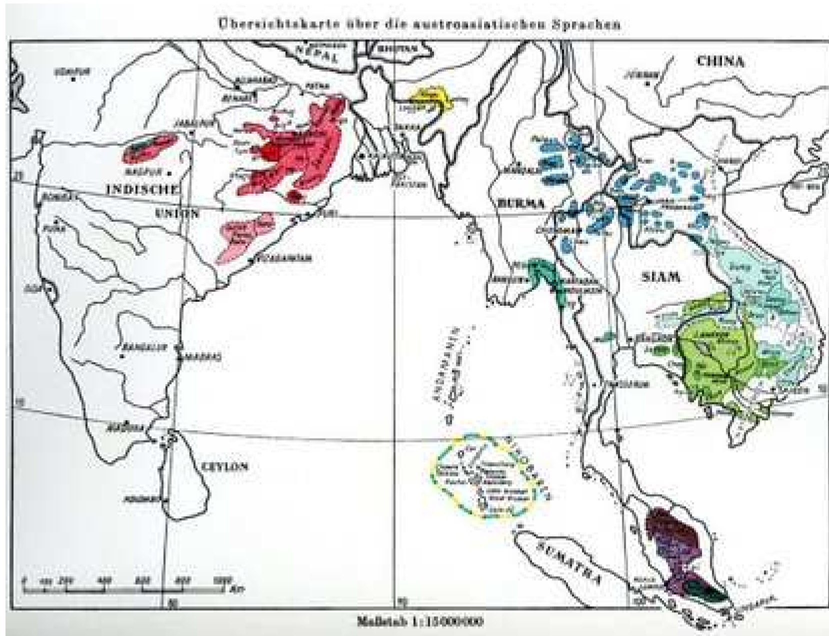
Rakesh Tiwari, 2003, Origins of iron working in India: new evidence from the Central Ganga plain and Eastern Vindhyas, *Antiquity*, pp.536-545 [ca. BCE 1800 Lohar dewa, Malhar, Raja Nal ka Tala](http://www.antiquity.ac.uk/ProjGall/tewari/tewari.pdf)
http://www.antiquity.ac.uk/ProjGall/tewari/tewari.pdf

Emergence of *lingua franca* in Bharat

A *lingua franca* had emerged in the doab ca. 3000 BCE with intense interaction and resultant cross-borrowings of lexemes of an expansive contact zone (from Tigris-Euphrates to Ganga, from the Caucus mountains to the Gulf of Khambat, from Kashmir to Kanyākumari) constituting the Sarasvati-Sindhu doab and the rest of Bhārata as an Bhāratīya Linguistic Area.

The assumption for establishing this concordance among lexemes removed in time, by over 1 millennium, is that the names of the arms and armour of the linguistic area, ca. 5500 BP continued, as parole, in the ancient languages of Bharat, by a hereditary tradition nurtured among the artisans (visśvakarma) and warriors (kṣatriya) alike and by the literary tradition of *Dhanurveda Saṁhit*ā and related texts.

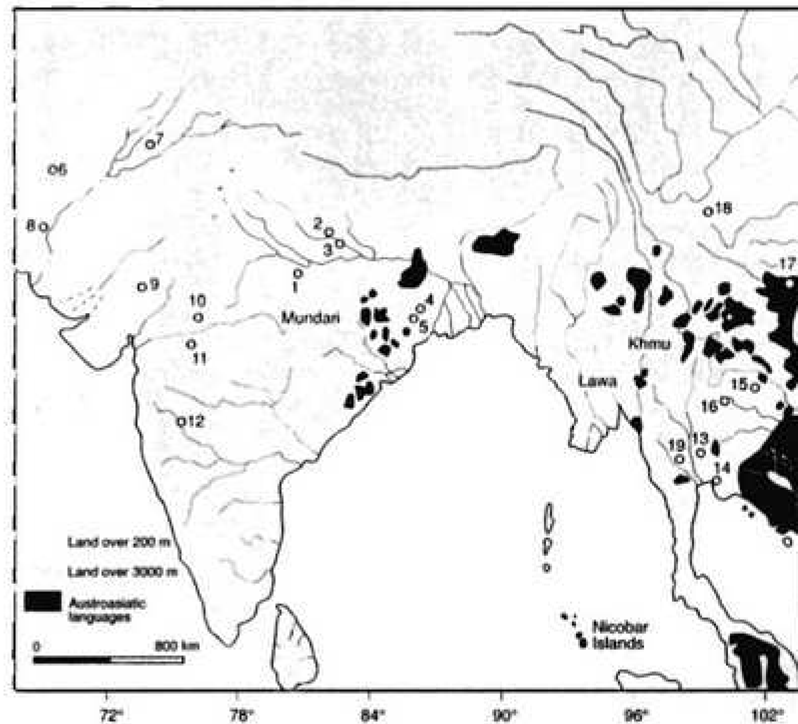
The areal map of Austric (Austro-Asiatic languages) showing regions marked by Pinnow correlates with the bronze age settlements in Bharatam or what came to be known during the British colonial regime as 'Greater India'. The bronze age sites extend from Mehrgarh-Harappa (Meluhha) on the west to Kayatha-Navdatoli (Nahali) close to River Narmada to Koldihwa-Khairdih-Chirand on Ganga river basin to Mahisadal – Pandu Rajar Dhibi in Jharia mines close to Mundari area and into the east extending into Burma, Indonesia, Malaysia, Laos, Cambodia, Vietnam, Nicobar islands. A settlement of Inamgaon is shown on the banks of River Godavari.



This, together with the islands in Balochistan, Amri-Nal on the Makran coast and settlements in the Rann of Kutch and Gujarat , broadly corresponds to the Bharatiya Language Community of mleccha-speakers. Mleccha as island-dwellers !

Pinnow map. Austroasiatic Languages: Munda (Eastern India) and Mon-Khmer (NE India, mainland SE Asia, Malaysia, Nicobars)

http://www.ling.hawaii.edu/austroasiatic/



Bronze Age sites of eastern Bha_rata and neighbouring areas: 1. Koldihwa; 2. Khairdih; 3. Chirand; 4. Mahisadal; 5. Pandu Rajar Dhibi; 6. Mehrgarh; 7. Harappa; 8. Mohenjo-daro; 9. Ahar; 10. Kayatha; 11. Navdatoli; 12. Inamgaon; 13. Non Pa Wai; 14. Nong Nor; 15. Ban Na Di and Ban Chiang; 16. Non Nok Tha; 17. Thanh Den; 18. Shizhaishan; 19. Ban Don Ta Phet [After Fig. 8.1 in: Charles Higham, 1996, *The Bronze Age of Southeast Asia*, Cambridge University Press].

Ca.2000 BC, there were movements of people in search of minerals and metals. From Meluhha, there were copper mining and smelting expeditions to Oman. At Namazga IV-V (Turkmenia), a number of alloys were experimented with. (Kohl, P., 1984, *Central Asia: palaeolithic beginnings to the Iron age*, Paris, Editions Recherchedes Civilisations, p. 113, 169; Harappan artefacts are found at Altyn-depe in the latest levels; the suggestion is that 'contact was strongest on the eve of the collapse of the site'). At Hissar were found arsenic-bronze, lead-bronze, lead, silver and gold. (Tepe Hissar III, 3rd millennium BCE.: a seal shows a four-spoke wheel). Jarrige reports the find of a vented furnace at Sibri. On the Baluchistan and Afghanistan border, Dales found 'miles of slag and furnaces' (Dales, G.F., 1973, Archaeological and Radioactive chronologies for protohistoric south Asia, in: *South Asian Archaeology*, N. Hammond ed., London, Duckworth, p. 167).

The resource base is verily the nidhi of bharatīya bhāṣā jñāna which can guide us to pursue studies in the evolutionary history related to every bharatiya language. It is apposite to record a tribute to the late Sudhibhushan Bhattacharya who initiated studies on Munda etymology , to the late Kuiper for his work on Nahali etymology and to the

work of Norman Zide on Munda numerals. See full bibliography at http://www.ling.hawaii.edu/faculty/stampe/AA/Munda/BIBLIO/biblio.authors

When the River Sarasvatī got desiccated between ca. 3900 and 3500 BP, many people of the River Basin moved into the Ganga-Yamuna doab and south of Gujarat to the Godavari River Basin and further south along the coast of Sindhu Sāgara (Arabian Sea) and also moved west of Gāndhāra in Afghanistan, resulting in the naming of a small river as Haraquaiti, in remembrance of River Sarasvati. Similar instances of cherishing the legacy of River Sarasvati are noticed in the naming of rivers near Puṣkar (Ajmer), and near Little of Rann of Kutch (Siddhapura) also as Sarasvati. The mother who nourished the forefathers of many Bhaāratīyas could not be forgotten. When a mother prays to river godesses, she invokes the names of Gan:gā, Yamunā, Sarasvatī; when she goes to a tīrthayātra and notices a san:gamam of two rivers, she learns from the folklore and folk traditions, that the san:gamam is triven.i, the third river being the antahsalilā Sarasvatī (the Sarasvatī which flows underground). The sthala purāṇa of the Sarasvatī temple at Basara (Vyāsapura) on the banks of River Godavari (near Adilabad district, Andhra Pradesh) states that the mūrti of Sarasvatī was made by Vyāsa taking three mu ṭis (hand-fuls) of sand from the river bed. There is also a temple for Sarasvati_ on the banks of Cauvery in Kūttanūr, near Swāmimalai (the pilgrimage centre for ēraka Subrahmaṇya, Ka_rttikeya). **The formation of these hypotheses is a plea for unraveling further the as yet untold story of the formation of Bharatiya languages, as an exercise in general semantics.**

Franklin C. Southworth, 2005, *Linguistic Archaeology of South Asia*, New York, RoutledgeCurzon is a new contribution to language studies of India of prehistoric times. Southworth justifies his work as follows: ”Our understanding of the relationship between language and society, based on studies of contemporary linguistic communities, has hardly begun to be applied to prehistory. The present work is only able to illustrate a small fraction of the possible applications. Renfrew’s proposal that social changes, as reflecte in the archaeological record and in human language, can provide a meeting point for archaeologists and historical linguists, seems not have received much notice even among archaeologists. The present work is, among other things, an attempt to provide more evidence of the relevance of such an approach, both to linguistics and to archaeology.” (opcit., p. 34).

Continuity of Proto-Vedic dialect (linguistic) area

A Proto-Vedic continuity in the linguistic area can be postulated.

Southworth provides an inkling of it.

“…varieties of speech with ‘prakritic’ phonology or morphology existed from the Rigvedic period onward. Hock and Pandharipande cite for example the prakritism kim ‘what’ for older kad, both of which appear in RV (Hock, HH and R. Pandharipande, 1976, ‘The sociolinguistic position of Sanskrit in pre-Muslim South Asia’, *Studies in*

Language learning 1: 102-38; see further examples and references therein). Furthermore, a number of cases have been shown where the Prakrits retain forms which are more archaic than the equivalents in the earliest Vedic, showing that these dialects were continuous from the pre-Vedic period. Thus the Prakrit languages, or dialects, known from early inscriptions (such as those of King Ashoka in the mid-third century BCE), from the early writings of Buddhists and Jainas, and from the early Sanskrit dramas, were contemporary with the Sanskrit of that period. For the earlier Vedic period, the coexistence of contemporaneous 'prakritic' varieties must be inferred. Cf. Emeneau's comment:

> We have an inkling…of the oldest Indo-Aryan of North India as a large dialect area whose speakers were unified by a common culture and by the religion that provides us with the evidential documents; there probably were other dialects as well, outside of this social and religious milieu… (1966: 127; reprinted by permission from Murray B. Emeneau, 'The dialects of Old Indo-Aryan', in H. Birnbaun, J. Puhvel (eds.), *Ancient Indo-European Dialects,* Berkeley and Los Angeles, University of California, pp. 123-38).

"Regarding the question of a Prakrit contemporary with the Rigveda, Emeneau notes:

> Tedesco…prefers to call this dialect parallel to Rgvedic 'archaic Middle Indic'; probably 'Proto-Middle-Indo-Aryan (or Indic)' is as good. No absolute chronology is possible for it…But we can guess that the latter [Proto-Middle Indo-Aryan] type of dialect was in existence from the beginning of the time span. (1966: 131)."

Hock and Pandharipāṇḍe also note that the early dramas of Bhāsa and Aśvaghoṣa (circa 1st century BCE) used Prakrits which were 'more archaic and presumably more natural' than the later stylized Prakrits (1976:114).

Evidence from Ashoka's edicts indicate that Prakrit was needed to reach out to large audiences across the Vindhyas and in the region between Taxila to the Ganga basin.

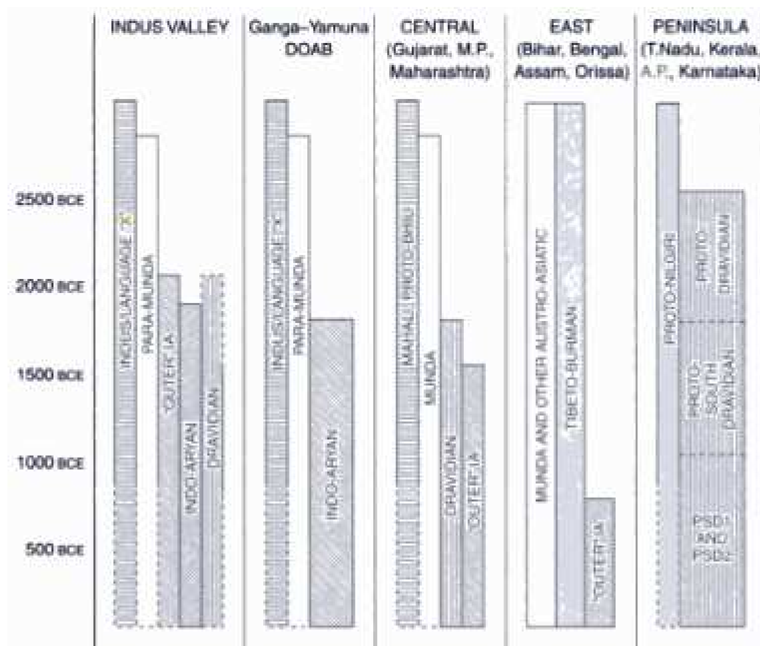
Proto-vedic continuity theory of Bharatiya (Indian) languages details the continuity of the linguistic area (S. Kalyanaraman and Mayuresh Kelkar, October 2005). The monograph on the theory (142 pages) is at
http://www.docstoc.com/docs/document-preview.aspx?doc_id=4126829 Updated at
http://sites.google.com/site/kalyan97/sarasvati-hindu-civilization
Mirror: http://www.scribd.com/doc/12134167/protovedic

Lokabhāṣā, deśabhāṣā (peoples' language, vernacular)

The word bhāṣā used by Panini comes from the root bhāṣ 'speak'. When he distinguishes bhāṣā from chandas, Panini was apparently referring to a living language which included

both Sanskrit and Prakrit as dialect versions. Some scholars suggest a diglossic relationship evidenced by hyper-Sanskritized foms (e.g. Skt. mukta Pkt. mutt ā 'pearl'). "In the Rigvedic period, at least the earliest part of it, the language of ordinary daily speech can be presumed to have been quite close to that of the texts which have been handed down to us…Acording to Deshpande, by the time of Katyayana (OIA kātyāyana, circa 300 BCE) 'Sanskrit was definitely reduced to the status of a literary, academic and ritual language and was being preserved mainly in the orthodox Vedic ritual and scholastic circles (Deshpande, MM, 1978, Paninian grammarians on dialectical variation in Sanskrit, Madras, *Adyar Library Bulletin*: 102). Patanjali (circa 150 BCE) distinguishes between the śiṣṭabhāṣā or language of the learned, which uses correct Sanskrit forms like kṛṣi 'farming' and the lokabhā□ā or people's language, with prakritic Sanskrit and in the deśabhāṣā (local speech, or vernacular) for the cultured man-about-town (Hock and Pandharipande 1976: 114). In contrast to Panini's usage of the term bhā□ā 'speech' to refer to Sanskrit, the Natyashastra (second century BCE, though recording an earlier tradition) uses it in reference to the Prakrits (Deshpande, MM, 1979, *Sociolinguistic attitudes in India: an historical reconstruction*, Ann Arbor, MI: Karoma Publishers: 22)…Among references to known languages, terms for 'Dravidian' first occurs in post-Vedic texts (e.g. Manu dravid.a), the Epics (Mahabharata dramid.a) and Pali (damil.a), but in the earl stages at least, these terms seem to refer to the people rather than their language." (Southworth, opcit., pp.55-56)

An early term used to refer to language, rather than to the people, was mleccha derived from *mlecchati* 'speaks indistinctly' (Vedic).



Chronology of South Asian linguistic prehistory (After Fig. 10.2, Southworth, 2005, p. 329): "Indus Valley. The 'Indus' language (group) is probably the oldest detectable linguistic stage, both in Panjab and Sindh. An unidentified western Austro-Asiatic

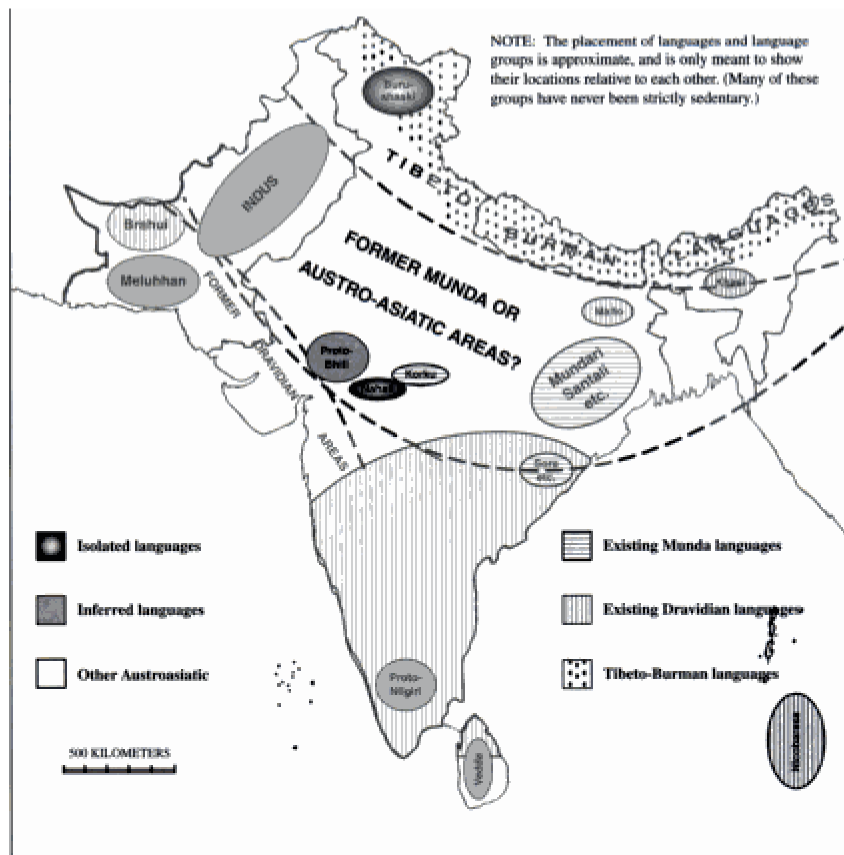
language designated as ‘Para-Munda’ probably functioned as a *lingua france* of this area. Both of these language groups may have been present as early as the seventh or eighth millennium BCE, when archaeologists record the beginnings of agriculture in areas bordering the Indus Valley. Indo-Aryan appears in the form of Vedic Sanskrit…probably preceded by outer Indo-Aryan. The arrival of Dravidian-speaking people in the area is difficult to date and is the subject of some controversy. Evidence of Dravidian borrowings in the Rigveda dates only from about 1200 BCE, according to some sources, yet it is nevertheless possible that Dravidian languages were spoken in Sindh and Saurashtra (and perhaps even in Panjab) considerably earlier…Ganga-Yamuna Doab. It is possible that the ‘Indus’ language(s), along with Masica’s Language ‘X’, were spoken in this area as well as in the Indus Valley; in fact, these two terms may refer to the same language or language family. If so, it would probably predate the Para-Munda language(s) in this region.”

The linguistic area of Sarasvati civilization interaction zones; 2) the existence of Language ‘X’ to explain the large number of agriculture-related words in Bharatiya languages with no cognates in Indo-European; and 3) the presence of Munda words in Vedic/Sanskrit point to this language continuum. Colin Masica could not find etymologies – from Indo-European or Dravidian or Munda or as loans from Persian -- for 31 percent of agricultural and flora terms of Hindi. These words could be part of Language ‘X’. (Colin Masica, 1979, Aryan and non-Aryan elements in North Indian agriculture, in: Deshpande and Hook (eds.), *Aryan and non-Aryan in India*, Ann Arbour, Univ. of Michigan, Centre for South and Southeast Asian Studies, 55-152). This substrate found in the evidence attested in middle and late Vedic texts in Uttar Pradesh is different from proto-Munda (without the typical prefixes). Only 5.7% and 8.9% of the terms were seen to be directly from Munda or Dravidian. The absorption of agricultural glosses into all subsequent Bharatiya languages is a unique phenomenon attesting to both Language X and proto-Munda substrates. FBJ Kuiper had also noted this phenomenon that many agricultural terms stemmed neither from Munda nor from Dravidian (1955, Rigvedic loan-words in: O. Spies (ed.) *Studia indologica Fetschrift fur Willibald Kirfel zur Vollendung seines 70. Lebensjahres*, Bonn, Orientalisches Seminar: 137-9; 1991, *Aryans in the Rigveda*, Amsterdam-Atlanta: Rodopi)

> "… a very considerable amount (say some 40%) of the New Indo-Aryan vocabulary is borrowed from Munda, either via Sanskrit (and Prakrit), or via Prakrit alone, or directly from Munda; wide-branched and seemingly native, word-families of South Dravidian are of Proto-Munda origin; in Vedic and later Sanskrit, the words adopted have often been Aryanized, resp. Sanskritized. "In view of the intensive interrelations between Dravidian, Munda and Aryan dating from pre-Vedic times even individual etymological questions will often have to be approached from a Pan-Indic point of view if their study is to be fruitful. It is hoped that this work may be helpful to arrive at this all-embracing view of the Indian languages, which is the final goal of these studies.” (F.B.J. Kuiper, 1948, *Proto-Munda Words in Sanskrit*, Amsterdam, Verhandeling der Koninklijke Nederlandsche Akademie Van Wetenschappen, Afd. Letterkunde, Nieuwe Reeks

Deel Li, No. 3, 1948, p.9)
http://www.scribd.com/doc/12238039/mundalexemesinsanskrit

Southworth (1979) also notes that the flora terms did not come from either Dravidian or Munda. Southworth found only five terms which are shared with Munda, leading to his suggestion that "the presence of other ethnic groups, speaking other languages, must be assumed for the period in question" (205), with hardly the 'slightest hints' as to what the languages were. Out of 121 terms for plants, Southworth finds only a little over a third have Indo-European etymologies. (Southworth, Franklin, 1993, 'Linguistics and Archaeology: prehistoric implications of some south Asian plant names' in: *South Asia archaeology studies* (81-85), ed. G. Possehl, New York, International Science; 2005, *Linguistic archaeology of the south Asian subcontinent*, London, Routledge-Curzon, Taylor and Francis Group)



Pre-Indo-Aryan substratum languages (After Fig. 3.1 Southworth, 2005, p. 65)

"Chapter 3. This chapter is a discussion of linguistic evidence found in old Indo-Aryan texts which indicate contact between speakers of OIA and other languages. The chapter's conclusions are summarized graphically in the map (Figure 3.1). Note that this map covers a period of several millennia, since it includes the probable earliest locations of Munda/AA and Dravidian languages in the subcontinent, as well as the inferred locations of earlier languages such as the 'Indus' language(s), along with the modern locations of Dravidian, Munda, and Tibeto-Burman languages, and isolated languages such as Nahali,

which are not necessarily the same as their ancient locations. Section 3.2 takes up the lexical evidence, looking first of all at loanwords in OIA which seem to be fom Munda or Austro-Asiatic (AA) languages. These are the earliest identifiable foreign words in OIA, appearing in the oldest books of the Rigveda…Though many of these words do not have specific Munda/AA etymologies, the hypothesis of AA origin is supported by the presence of prefixes of types found in Munda and AA languages, which are not found in the other language families of the area. These words appear in OIA texts belonging to the entire Vedic period, indicating the presence of Munda/AA speakers in all the regions associated with Vedic texts, from Panjab to eastern Uttar Pradesh – as well as further to the east, given the connection of Munda with the rest of Austro-Asiatic. Dravidian loanwords in OIA appear at a somewhat later date…in contexts which suggest a more southerly location, possibly Sindh. These words also continue to appear in OIA throughout the Vedic period and into the Epic and Classical Sanskrit periods. A small group of controversial words suggest the possibility of an even earlier contact between Dravidian and OIA, in the period of Proto-Indo-Iranian, which if it occurred must have been separate from that reflected in the Rigveda. Apart from words attributable to languages of limited extent such as Burushaski and various (named or unnamed) Tibeto-Burman languages, an additional body of foreign words found in all periods of OIA are of unidentified origin, probably pre-Indo-Aryan and pre-Dravidian, and in some cases perhaps pre-Munda/AA. An examination of agricultural vocabulary in modern Hindi indicates that, even among words which existed in OIA, approximately 30% cannot be traced to known languages. Thus it is likely that a number of languages existed in South Asia before the arrival of the Indo-Aryan and Dravidian speakers. Only a few of these languages, such as Burushaski and Nahali, can be identified by name. The name 'Indus' is used here to designate this group of languages…Overall, the lexical and structural evidence of OIA and Dravidian languages suggests that a linguistic interaction zone or 'linguistic area' existed in South Asia before the arrival of Indo-Aryan languages in South Asia. Within the subcontinent, it involved speakers of (Para-)Munda, Dravidian and 'Indus' languages, as well as the ancestors of Burushaski and other linguistic isolates…and, was probably linked to speech communities of Central Asia...

Lingua franca, deśi

"Chapter 3 presents an ancient linguistic area, with different languages in contact with each other in various parts of the subcontinent, particularly in the Indus Valley. Because of certain linguistic changes, particularly the adoption of the dental-retroflex contrast in consonants, it is inferred that the contact between the 'Indus' language and the Munda/Para-Munda languages was somewhat intense, implying a fairly high degree of socio-economic integration. The same was true later of the contact between OIA (presumably both the inner and outer varieties) and the local languages, which presumably included both 'Indus' and Para-Munda. Thus we infer some sort of economic interdependence in both of these cases. If 'Indus' and Para-Munda were languages of the Indus Valley culture (respectively a local language and an inter-regional *lingua franca*), then it would not be surprising if such contact occurred; nor would it be surprising if early speakers of Indo-Aryan interacted with the local people in similar ways, given the need of pastoralists for agricultural produce. Interactions between Dravidian and Indo-

Aryan speakers appear to be somewhat later, and perhaps first occurred in Sindh. Whether there are any specific archaeological assemblages which can be linked with any of these contact situations would require a separate study."
http://ccat.sas.upenn.edu/~fsouth/LASAcontents.pdf

"Three types of languages are shown in Figure 3.1: (1) languages belonging to known families (a) Munda and related Austro-asiatic languages, (b) Dravidian languages, and (c) Tibeto-Burman languages; (2) isolated languages of no known language families; (3) languages whose prior existence is inferred from traces left in existing languages. These types are given in detail in the following list: (1a) Munda/Austro-asiatic languages. The prehistoric distribution shown in Figure 3.1 is based on (a) the locations of existing Munda languages, (b) the existence of probable Munda/Austro-asiatic words in OIA throughout the entire Vedic period, and (c) the generally accepted link between Munda and other Austro-Asiatic languages in South and Southest Asia. (1b) Dravidian languages. (1c) Tibeto-Burman languages. Various languages of this family are found in the foothills of the Himalayas. In general, very little is known about their earlier history…Newari or another Tibeto-Burman language may have been spoken in the areaof northern Bihar where the Buddha spent most of his life, and may have played a role in the (alleged) merger of l and r which was characteristic of the Prakrit inscriptions of the eastern region. (2) Isolated languages. Those shown in Figure 3.1 are among a handful of languages with no known genetic links to other languages, inside or outside of South Asia: Burushaski and its predecessors in the northwest, which may be the source of a few words such as kīlāla RV 'biestings, a sweet drink' (Bur. Kilāy); predecessors of isolated languages scattered about the subcontinent, including Kusunda in Central Nepal, Tharu in Southern Nepal and UP, and Nahali in Central India. These languages may belong to the oldest surviving linguistic strata in South Asia, though there is no way of knowing if they are truly indigenous to the subcontinent. One or more of them may have previously occupied larger areas, but at present we know nothing of their earlier history. (3) Inferred languages. These are languages whose existence is inferred from traces (vocabulary and/or grammatical constructions) found in existing languages. Thir prehistoric status is comparable to that of the isolated languages. (a) The 'Indus' language(s), which served as the source of numerous words, mainly names of plants, found in OIA and early Dravidian; (b) 'Meluhhan', the source of some 40 'Indian' words found in ancient Mesopotamian sources, referring to trade goods originating in the Indus Valley. This language may have been located in the hilly areas of Baluchistan, near to the Indus Valley; (c) An unknown substrate language, or group of languages, in the area of Bhili, Ahirani, □angi, and Katkari (the region where Gujarat, Rajasthan, Madhya Pradesh, and Maharashtra adjoin each other) which has left its mark on the lexicon, and perhaps the grammatical structure, of these languages. I have previously dubbed this substrate 'proto-Bhili'; (d) 'Proto-Nilgiri', a pre-Dravidian substrate in the Nilgiris in South India (Zvelebil 1990: 63-70); (e) The Vedda substrate in Srilanka, inferred on the basis of loanwords and collocations in Sinhala (De Silva 1972)…(g) Masica (1979) posited a 'Language X' to account for agricultural words of unknown origin in Hindi-Urdu. Though Masica started with Hindi vocabulary in tracing the history of these words, the large majority of them are of general occurrence in Indo-Aryan. On the assumption that the ancestors of all Indo-Aryan languages passed through the Indus Valley during the

OIA period, a source in that area seems most probable, and in the absence of evidence pointing to some other specific location, it seems reasonable to posit the 'Indus' languages as the source of this material. Of course, this language (group) may not have been confined to the Indus Valley region." (Southworth, ibid., pp. 64-66)

See notes on Munda classification.

Mleccha words in Sumerian:

> *ab-ba-me-lu*h*-ha* '*abba* wood of Meluhha' (a thorn tree), *mêsu* wood 'of the plains'.
> šimmar ~ RV *śalmali* at 7.50.3, 10.85.20, and *śimbala* at 3.53.22.
> *magilum* boats of Meluhhan style (Possehl 1996).
> Professional names: such as simug `blacksmith' and tibira `copper smith'
> Agricultural terms: like engar `farmer', apin `plow' and absin `furrow'
> Craftsman: like nangar `carpenter', agab `leather worker'
> Religious terms: like sanga `priest' (cf. Gujarati sanghvi 'priest who accompanies the pilgrims)
> *sinda* (*si-in-da-a*, *si-in-du*) Sindh wood, date palm, the 'red dog of Meluhha'

See: www.sumerian.org/sumerian.pdf Sumerian Lexicon Version 3.0 by John A. Halloran

Mleccha, the *lingua franca* of Bharatam, of the 'linguistic area' called Sarasvati civilization

> A hypothesis can be posited: Language X + Proto-Munda = Proto-mleccha (vernacular of Sarasvati hieroglyphs). The hypothesis will be tested by identifying the borrowings into the Indian languages which can explain, rebus, the Sarasvati hieroglyphs in a Proto-Vedic continuum of Indian linguistic area.

Since 1956, there has been a paradigm shift in IE linguistics as applied to the area called 'India' using terms such as areal linguistics, *sprachbund*, linguistic area.

The credit for using the term 'linguistic area' goes to MB Emeneau, even though he used the term as a translation of 'sprachbund' invented by HV Velton in 1943.

The term *sprachbund* was used in 1931 by Nikol Trubetzkoy and Roman Jakobson when they discussed the long-recognized linguistic areas such as the languages of the Caucasus or of the Balkans. The following works have been reviewed: *Language and Linguistic Area, Essays by Murray B. Emeneau*, (selected and introduced by Anwar S. Dil), 1980, Stanford University Press, California (which includes: Emeneau, MB, 1956, India as a linguistic area, in: Language, 32.3-16 Kuiper, FBJ, 1967, The genesis of a linguistic area, *Indo-Iranian Journal* 10: 81-102 Masica, Colin P., 1976, *Defining a linguistic area, South Asia*, Chicago, University of Chicago Press (Based on the author's thesis, 1971).

The conclusions of Southworth about ‘Indus’ language, Proto-Munda and Language X are consistent and acceptable since the assumption made about the arrival of Indo-Aryan languages is not relevant for and do NOT upset his hypotheses. The *mleccha* Southworth refers to is more extensive in areal usage than suggested by his analyses. Mleccha-speaker areas according to Mahabharata and Patanjali are extensive areas covering the *lingua franca* of many regions outside of Kurukshetra – ranging from Gandhara in the west to Kosala in the East, from Kashmir in the north to Coda in the South.

What Hemachandra calls deśi seems to aptly describe this linguistic area as a continuum from the days of Sarasvati hieroglyphs.

The word *mlecchati* of Vedic, means ‘speaks indistinctly’. Mliṣṭa is referred to by Panini meaning ‘spoken indistinctly or barbarously’ [Monier-Williams 1899; Pali milakkha, Pkt. Miliccha; <PD *mur̤i/mir̤i ‘say, speak, utter’; *muzankk ‘make noise, speak’ (DEDR 4989); probably connected with tamir̤ (Tamil)]. Patanjali’s Mahābhāṣya refers to asura (OIr ahura) who substitute ***l*** for ***r*** an apparent reference to poor speakers of Indo-Aryan. Parpola refers to Dasa as pre-Vedic Indo-Aryan speaking people. Deshpande notes that the Dasavar□a was a reference to all the indigenous peoples (1979b:1). (Southworth, ibid., p. 57) Hock notes that Balbūtha Tarukṣa, presubaly ba Dasa, is referred to as a patron of a Vedic seer. Hock also notes that the combatants of ‘Battle of Ten Kings’ include those with Aryan-sounding names (such as Vasiṣṭha and Bharata) and those with non-Aryan-sounding names (such as the Sṛnjayas and śimyu) on both sides. (Hock, 1993 [1996], Subversion or convergence? The issue of Pre-Vedic retroflection re-examined, in: *Studies in the Linguistic Sciences* 23: 86-7) [publ. 1996]

In Mahabharata, Pahlava, śabara, śaka, Yavana, Pundra, Kirā□a, Drami□a, Simbhala, Barbara, Darada and Mleccha are collectively summed up as mleccha (1.165.35-37).

Manu 10.43-45 considered Coda, Dravida, Persian etc. as former kshatriya who sank to the level of śūdra, whether they speak the language of the mleccha or the language of arya. Kane H.Dh. Vol. II, p. 383 gives the impression that these groups were bilingual, speaking both ‘mleccha’ language and ‘ārya’ language.

A more reasonable interpretation is that mleccha is the ungrammatical *lingua franca* as distinct from grammatically correct, literary bhāṣā as proto-Sanskrit. Samskṛta (refined speech) is distinguished from asura, pisaca, mleccha as dialects with incorrect pronunciation of Samskṛta. For instance, Satapatha brāhmaṇa notes that the mleccha-speakers failed to articulate arava(h) correctly; they uttered ‘helava helava’. (te asura attavacasa he’alave he’alava 3.2.1.23). One notes that the madhyandina-branch of the śatapathi Brahmins were occasionally indifferent to correct articulation; so that they got corrupt recitation as the mleccha did. http://www.koshur.org/Linguistic/8.html “Mleccha

were those who could not pronounce Samskṛta (vak) appropriately as prescribed in Svaravidhāna of the grammatical treatises. Mostly the mleccha were the Kirata, the Savara, the Pulinda (Amarakośa, Sundaravarga).” Akkadian maliku(m) means god, king, lord. This anecdote clearly notes mleccha as a grammatical entity, a language.

Jayaswal notes that mleccha was the Samskṛtam representation of Hebrew *melekh*

meaning, 'king' and that the utterance: he lavah! he lavah! in the śatapatha brāhmaṇa was a specimen of mleccha speech; that this speech is cognate with Hebrew ēloāh (plural ēlōhim) meaning, 'God' (Jayaswal, KP, 1914, 'Kleine Mitteilungen', *Zeitschrift der Deutschen Morgenlandischen Gesellschraft*, vol. LXXII, p. 719). For the specimen of mleccha speech, an alternative explanation is provided in Mahābhāṣya with a variation, helayo helayo; Sāyaṇācārya notes that the specimen of Asura/mleccha speech is a variant of he 'rayo, he 'raya meaning, 'O the (spiteful) enemies', explained by the asuras' inability to pronounce the sounds, - r- and –y-. (*Mahābhāṣya* 1.1.1; KC Chatterjee, 1957, *Patanjali's Mahābhāṣya* , Calcutta, pp. 10-11; Sāyaṇa on śatapatha brāhmaṇa, 3.2.1.23).] Another example of a substrate term: Sumerian tibira, tabira (Akkadian. LU2 URUDU-NAGAR =. "[person] copper-carpenter"); a word indicating borrowing from a substrate. In Pkt. tambira = copper. According to Gernot Wilhelm, the Hurrian version of tabira is: tab-li 'copper founder'; tab-iri 'the one who has cast (copper)'.

Asko and Simo Parpola claim that Meluhha is the origin of the Sanskrit mleccha. Asko Parpola and Simo Parpola, 1975, "On the relationship of the Sumerian toponym Meluhha and Sanskrit mleccha". *Studia Orientalia* 46: 205–238. Sargon of Akkad (c. 2200 BCE) had ‘dismantled the cities, as far as the shore of the sea. At the wharf of Agade, he docked ships from Meluhha, ships from Magan.’ Comparable words are: Sindhi *milis*, Panjabi *malech*, Pali *milakkhu.*

śatapatha brāhmaṇa 3.2.1.18-24 speaks of asuryā vāk. After the Asura were deprived of speech (vāk) which was offered to fire for purification while reciting anuṣṭubh, the asura shouting he’layo he’layo got defeated. No Brahmin should speak such mleccha (speech).

“Now the non-Aryan people that today live closest to the territory formerly occupied by these ancient kingdoms (Anga, Vanga, Kalinga) are Tibeto-Burmans of the Baric branch. [For the easy access of the Baric people to the area occupied by these three kingdoms, see the introduction to my ‘Classification of the Northernmost Naga Languages’ *JBRS* 39 (1953), 225-264.]One of the languages of that branch is called Mech, a term given to them by their Hindu neighbours. The Mech live partly in Bengal and partly in Assam. B(runo) Lieblich remarked the resemblance between *Mleccha* and *Mech* and that Skr. *Mleccha* normally became Prakrit *Meccha* or *Mecha* and that the last form is actually found in śaurasenī (‘Der Name Mle_ccha’, *ZDMG* 72 (1918), 286-7).. Sten Konow

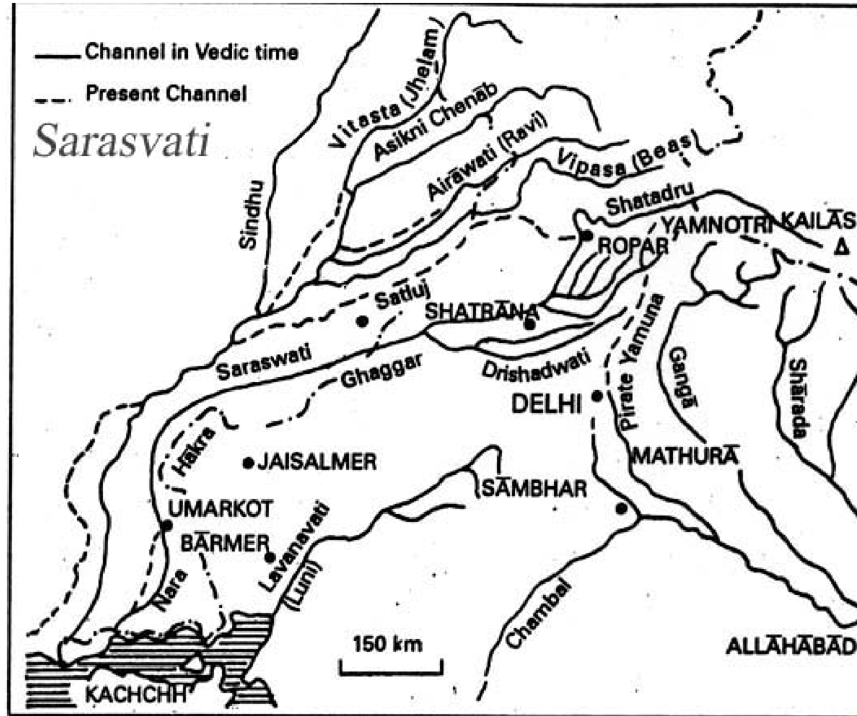
thought *Mech* probably a corruption of *Mleccha*. (*Linguistic Survey of* India 3, pt.2, p.1) I do not believe that the people of the ancient kingdoms of Anga, Vanga and Kalinga were precisely of the same stock as the modern Mech, but rather that they and the modern Mech spoke languages of the Baric division of Sino-Tibetan…I suspect that skr. *Mleccha*, referring to the indistinct speech of some non-Aryans, is taken from proto-Bodish (proto-Tibetan) **mltśe* 'tongue', Old Bodish ltśe, Kukish generally **mlei*, the combination of initial consonants *(*mltś-)* being simplified in various ways in different Tibeto-Burmic languages. Aspiration cannot occur after *l* in Old Bodish, and the proto-Bodish form may have been **mlts'e* for all we know, so the *cch* of Skr. *Mleccha* may come nearer the primitive affricate than anything preserved in the Tibeto-Burmic languages. "(Robert Shafer, 1954, Ethnography of Ancient India, Wiesbaden, Otto Harrassowitz, p. 14; p. 33)

Many inscriptions from many sites

(After Asko Parpola ppt) Uniformity over the civilization area

HARAPPA PUNJAB PAKISTAN
MOHENJO-DARO SINDH PAKISTAN
CHANHU-DARO SINDH PAKISTAN
ALLAH-DINO SINDH PAKISTAN
LOTHAL GUJARAT INDIA
PABUMATH GUJARAT INDIA
DESALPUR GUJARAT INDIA
KALIBANGAN RAJASTHAN INDIA
HULAS UTTAR PRADESH INDIA
GONUR TURKMENISTAN
KISH IRAQ

Linguistic area: The clustering of the find sites around the Sarasvati Sindhu river basins and the coasts of Gulf of Khambat and Kutch point to Meluhha (mleccha) as the language underlying the epigraphs.



Valdiya, K. S., 1996, *Resonance*,1, pp.19-28 The map shows Vedic River Sarasvati and diversion of Yamuna into Ganga and of Sutlej into Sindhu, ca. 1900 BCE, thus desiccating the glacial flows. Sarasvati civilization with over 2000 archaeological sites (that is, 80% of a total of about 2,600 sites of the civilization) on the Sarasvati River Basin in India, is a civilization continuum.

Mleccha vācas: Locus (area occupied by mleccha speakers)

Name of Himalayas is given as dāruṇa mleccha (Mārkandēya Purāṇa). Bhagadatta the ruler of Prāgjyotiṣa was a mleccha heading a large number of yavanas. In Mahabharata (XVI.7.63) ābhīras are called mleccha; kings regarded as vrātya. Garuda Purana refers to madraka (Capital śākala, modern Siālkot) as mleccha.



Figure 1. Possible locations of the seismic regions.

Mahabharata lists people and their characteristics of comprehension -- linguistic in particular:

ingitajnāś ca magadhāh
prekṣitajnāś ca kosalāh
ardhoktāh kuru-pāncālāh śālvāh
kṛtnānuśāsanāh

pārvatāyāśca viṣamaāyathaiva
girayas (sibayas) tatha_
sarvajnāyavanārājan śūrās caiva

viśeṣatah
mlecchāh svasamjnāniyataānānukta itaro janah

"The magadhas comprehend gestures, the kośalas understand at a glance; the kuru-Pāncālas a speech half-uttered, the śālvas only when the whole sentence is spoken; mountaineers, like the śibi, understand with difficulty. The yavanas, O king, are omniscient, the śūras especially so. The mleccha rely on their own knowledge; 'other people cannot understand.'" (*Cr. Ed.* VIII.30.79-80; Roy VIII.45.34-35)

"Buddhaghosha explains mleccha as referring to 'andha damilādi' (Andhra, Tamil, etc.) The Jaimini Dharmashastra lists some (sanskritized) Dravidian words as characteristic of mleccha speech, and Panini makes reference to the onomastic suffix –an (a Dravidian form) in the names of members of the Andhaka, Vṛṣṇi and Kuru tribes." (Southworth, opcit., fn. 30, p. 61) śatapatha brāhmaṇa includes in mleccha territories: Saurashtra, Gujarat and Maharashtra, but also the eastern areas (Bihar and Bengal). Mahabharata regards Anga, Vanga, Kalinga as mleccha kingdoms and that the sons of Turvasu are the Yavanas and that the sons of Anu were the Mlecchas. (*Cr. Ed.* I.80.26; Roy I.85). cf. Dharmasūtra I.1.32-33: ca. 4th cent. BCE, according to Bhandarkar. Deshpande observes: "The Baudhayana Dharmasūtra (1.1.32-33) gives us a clear idea of how the 'Vedic Aryans' viewed the 'mixed Aryans' of the outer regions: The inhabitants of ānartta, of Anga, of Magadha, of Saurāṣṭra, of the Deccan, of Upavṛt, of Sind, and the Sauvīras are of mixed origin. He who has visited the countries of the ārattas, Kāraskaras, Pu□□ras, Sauvīras, Vangas, Kalingas [or] Pranūnas shall offer a Punastoma or Sarvap□□□hī sacrifice [for purification]." (Deshpade, MM, 1979, *Sociolinguistic attitudes in India: an historical reconstruction*, Ann Arbor, MI: Karoma Publishers, 265; note 1, p. 105; note 22, p. 107). Deshpande underscores the fact (ibid. p. 48) that speakers of Indo-Aryan who belonged to regions other than Aryavarta considered themselves as āryas, not mlecchas. This indicates that language was the criterion for distinguishing Aryan-speakers – arya vācas-- and mleccha-speakers – mleccha vācas.

Devala noted that anyone who had visited the Sindhus or Sauvīras should be initiated afresh.

A good indication of the mleccha-speaker community is also provided by the locations of Ashoka's edicts which included territories crossing the Vindhya mountains. Adding Dravida (andha damil a_di), the mleccha was apparently the *lingua franca*, the spoken tongue which enabled the use of Prakrits to convey Ashoka's messages through the edicts.

Southworth notes: "The term mleccha occurs often in collocation with bhā□ā 'speech' and deśa 'country, region'. It is probable that in the OIA Brahminical sources, the lands designated as mleccha-deśa included not only areas in which non-Aryan languages were spoken, but also those Indo-Aryan-speaking areas which were regarded as religiously unorthodox.)" (ibid., pp.57-58). This may explain why Magadha was known as mleccha-

deśa (whether the language of that area was a form of Indo-Aryan or not), 'whereas to the Buddhists the term meant primarily those lands in which non-Aryan languages were spoken.'..It seems probable, on the basis of this evidence, that there was a good deal of bilingualism and diglossia in ancient India, with those of non-Aryan groups who dealt with the Aryan Brahmans being obliged to learn some form of Indo-Aryan (Sanskrit or Prakrit) for day-to-day communication. On the other hand, the presence of many words of foreign origin in Vedic from the earliest times indicates that this was not a one-sided process." (ibid., p. 58).

The nature, pattern and expanse of the linguistic area in Sarasvati-Sindhu and Ganga river basins and beyond, have been presented in the following documents:

Continuity of mleccha language-community and Sarasvati hieroglyphs (19 Jan. 2009)
http://www.scribd.com/doc/10907184/continuityofmleccha

powerpointpresentation 28 slides
http://www.scribd.com/doc/10921215/continuityofmleccha

Linguistic Area as Language-community

Linguistic areas are areas in which 'languages belonging to more than one family show traits in common which do not belong to the other members of (at least) one of the families'.The methodology used to recognize a linguistic area is a bifurcate one. First, a typological feature is established as pan-Indic and at the same time not extra-Indic. Second, the historical diffusion of features throughout the languages of the linguistic area are investigated through questions of lexical lists, phonology, syntactic, morphological and semantic development and sociolinguistic questions. (Emeneau, opcit., pp.1, 2). Emeneau recognizes that '…it is rarely possible to demonstration this (Indo-Aryan to Dravidian) direction (except for diffusion of lexical items).

Features investigated

In this investigation, an impressive list of features are involved. Some features listed by Colin Masica are as follows: (From Appendix A, Colin Masica, opcit., pp. 187-190)

A.Phonological
1. retroflex consonants, esp. stops
2. aspirated onsonants
3. nasalized vowels
4. affricatin opposition ta/ts
5. syllabic structure and phoneme distributions?
6. tendency to initial stress?
B. morphological
1. absence of prefixes
2. verbal prefixes

3. two stems in personal pronouns
4. same case morphemes added to singular and plural stems
5. dative in k-/g-
6. morphological causatives
7. anticausatives
8. negative conjugation
9. phonaesthetic forms a)repludicated; b) in –k
10. echo words
C. syntactic
1. conjunctive participle
2. quotative c.p. 'having said' a) w. phonaesthemes
3. agentive (quasi-ergative) construction, esp. 'impersonal' type
4. numeral classifiers
5. enclitic particle –api/-um; 'even/also/indefinite/and'
6. dative-subject construction
7. absence of verb have
8. word order features SOV, AN, GN, demN, Po, SMAdj, etc.
9. explicator compound verbs
10. recapitulation of final finite V by initial conjunctive ppl. in following sentence
11. relative participle

Based on an investigation of these features of languages of Bharat (of Indo-Aryan, Munda and Dravidian families), the conclusion drawn by Emeneau and Masica is that Bharat constitutes a linguistic area, as defined by Emeneau. FBJ Kuiper's paper, 'The genesis of a linguistic ara' (1967, *Substratum influence on (Rig-vedic) Sanskrit? Studies in the Linguistic Sciences,* University of Illinois, 5, 76-125) was published in a 1974 volume 3 of International Journal of Dravidian Linguistics (ed. VI Subramoniam, Trivandrum) and was devoted to Contact and Convergence in South Asian Languages. The volume also had a paper by Franklin C. Southworth, 'Linguistic stratigraphy of North India'. Kuiper investigated the existence of retroflex phonemes in Sanskrit, even in the earliest Vedic language in terms of bilingualism, the use of gerunds in the Rigveda and the use of iti as a marker found already in the Rigveda. This analysis of Kuiper should convince anyone that 'pre-indo-aryan' was not a 'language spoken in a vacuum' (p.86). Emeneau argues further that the sources for the borrowed traits could be Dravidian and not a lost language family; that the three traits noted by Kuiper are of the highest antiquity in the record. (Emeneau, opcit., p. 175).

Emeneau's answer to Hock's critique

A critique of South Asia as a linguistic area is Heinrich Hock (1975) who stretches himself to find Indo-European antecedents or parallels for some of the alleged areal features and points to Indo-Aryan to Dravidian direction of influence, to native Indo-Aryan developments uninfluenced by substratum contacts. "This is to downgrade the striking Indianization which Indo-Aryan has undergone, and in at least the case of retroflex consonants to find perverse a century and a half of scholarly endeavor."

(Emeneau, opcit., p. 5). This is subdued but vehement denunciation of Hock's heroic effort at debunking 150 years of scholarship. Emeneau goes on to argue: "Hock's skepticism (88,114) as to 'whether Proto-Dravidian did in fact, as is generally assumed (at least implicitly), antedate the arrival of the Indo-Aryans' seems unjustified, based as it is on a rejection of the glottochronological method of relative dating – this is merely the negation of results based on a method which is otherwise dubious in its results, and no argument can be based on it. Another attempt, archaeological, to put a late date on Dravidian was, I argued, based in part on aprioristic linguistic arguments…The 2000-year record of Tamil in its present position and the certainty that Tamil is not equitable with Proto-Dravidian require an intervention of a long period between PDr. and Tamil, as is clear from the tree-diagram now given for the Dravidian family (whatever the details of the diagram) – but of course the question is: 'how long a period?' " (Emeneau, opcit., fn.1, p. 14).

India and linguistics

"It was…the linguistics of India of more than two millennia ago that was the direct germinal origin of the linguistics of the Western world of today…the (collection of Vedic) texts has as their basic operative principle the revealed words themselves. They could bring their desired benefits only if the words were correctly enunciated; they could even harm their utterers if they were mishandled. How to achieve this correctness over the centuries in the face of relentlessly encroaching linguistic change? This problem which has engaged other communities as well, seems to have been better solved by the Hindus than by any others. They became very exact phoneticians at a time (was it the beginning of the first millennium BC, or was it a litter earlier or a little later?) when all other peoples either had made no advances in this direction or were only the most hopeless fumblers. It is thought that the phoneticians were actually responsible for the text of the Rigveda as we have it today. Their phonetic handbook (prātiśākhya) to this Veda is warrant indeed that three millennia have produced only the most insignificant of changes in the text and the pronunciation of the text. But it was not only phonetics that had to be developed. Meanings were important, and the transmitters of the Veda composed lists of words (nighaṇṭ u) which served as partial glossaries to the Vedic text; as meanings became more difficult for later generations to be sure of, lists grew fuller and commentaries were added. Morphological and syntactic matters too were important in arriving at an understanding of the purport of the old texts, and that such matters received treatment is certain, even though none of the old treatises have survived…Intellectual thoroughness and an urge toward ratiocination, intellection, and learned classification for their own sakes should surely be recognize as characteristic of the Hindu higher culture. It has often been pointed out that the Hindu is spiritual, i.e. concerned with his soul and its relation to the universe, and that his philosophy is a means of salvation whereby his soul may be released from the bonds of the phenomenal and may attain to union with the spiritual element of the universe. Since, notoriously, philosophers cannot agree, a large number of philosophical substructures have emerged from the Indian thinking – monist, modified monist, dualist, and pluralist, theist and atheist, based on a soul and denying a soul, concentration on the substantiation of evidence and relatively neglectful of this... (the

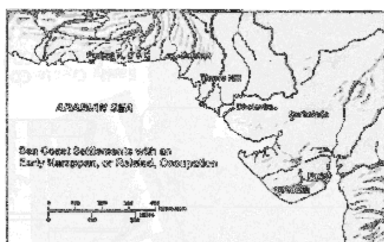
Hindus) became grammarians, it would seem, for grammar's sake…the language described by Pāṇini became India's literary language because of his description…Respiration and digestion are automatic but not learned, gesture and speech are automatic but the result of learning. Hindu culture was so much interested in all these things that techniques both of investigation and of manipulation were developed… This is essentially a raising of the subliminal to full consciousness. This too is the essence of the classical Hindu dance – a codification of the learned but subsconscious use of gesture, and addition to and elaboration of it…And surely the study of language is but another example of the raising to consciousness of an acquired but subliminal activity – for analysis of the activity and for normative manipulation of it…The only type of description that is adequate qua description, for any body of data, is one that attempts to identify all similarities that are to be found in the data, and to organize the similars into classes and those into more inclusive classes, and so on until the most inclusive classes of classes are found…The native medieval Greek and Latin phonology is immature and inept compared with the Hindu phonetic, phonemic, and morphophonemic analysis…One point of contrast may be made with Greek grammar; the Hindu analysis of relations between allomorphs in terms of guṇa and vṛddhi is a prefiguring of the Indo-European ablaut system, taken as far as it could go, considering that Sanskrit had lost the qualitative ablaut and considering too that the Hindu grammarians did not know…any other Indo-European language with which to make comparisons. The Greek language, on the other hand, preserved both qualitative and quantitative ablaut relations in a remarkably transparent form, and yet the Greek grammarians, and those who followed them in the West until the nineteenth century, were unable to construct a system of relations comparable to that seen in Pa_n.ini." (Emeneau, opcit., pp. 19-20).

If Emeneau and IE linguistics had pursued this inclusive definition of description -- to identify all similarities that are to be found in the data, and to organize the similars into classes – to a logical conclusion of the analysis of the features of bh**ā**ratiya languages would have led to define Prakrit as a language family of Bharat. But alas, it was not to be, because the linguistics had to carry the baggage, the received wisdom which had already straight-jacketed an IE family of languages (including of course, Vedic and Sanskrit, given the wealth of literature and the texts which were available to develop the discipline). Emeneau (p. 89) argues that in regard to retroflex (domal or cerebral) consonants which is a pan-indic feature, the later Indo-Aryan developments are due to a borrowing of indigenous speech habits through bilingualism, and "to the well-ground suspicion that even the early development of retroflexes from certain Indo-European consonant clusters results from the same historic cause. (This doctrine is held by, e.g. Jules Bloch, *Sanskrit et dravidien*, Bull. Soc. Ling. Paris 25.1-21 esp. 4-6 (1925); SM Katre, *Some problems of historical linguistics in Indo-Aryan,* Bombay, 1944, pp. 135 ff.; Gundert in 1869, *Ztsch. Deutsch. Morgenlandischen Ges.* 23.517 ff.") Prima facie, it should be clear from the Indian Lexicon which absorbs over 4000 of the etyma of Dravidian Etymological Dictionary and over 1000 words of Munda with concordant semantic clusters of Indo-Aryan (cf.http://www.hindunet.org/saraswati) that there was a virile culture that had developed on the Saptasindhu region (exemplified by the

discovery of the Sarasvati Civilization, ca. 3500 to 1500 BCE), and that the nomadic looters and cattle-drivers if they ever came into the Saptasindhu region from elsewhere already found a high level of Hindu culture. IE linguistics was unduly focused on finding etymologies from the vocabularies of the Indo-European languages rather than understanding the substructure of languages which flourished and continue to the present day in the Saptasindhu region and larger Bharat. Even a cursory inspection of the glossaries will suggest at least some borrowings from Munda and Dravidian into Sanskrit or versions of Indo-Iranian. Emeneau notes that the Sanskrit etymological dictionary of Uhlenbeck (1898-99) and the Indo-European etymological dictionary of Walde and Pokorny (1930-32) completely ignore the work of Gundert (1869), Kittel (1872, 1894), and Caldwell (1856, 1875). Even the earliest Sanskrit texts show features which are historically un-Indo-European in their nature. (Emeneau, opcit., p. 110). "Vocabulary loans…They are in fact all merely 'suggestions'. Unfortunately, all areal etymologies are in the last analysis unprovable, are 'acts of faith' (as Meillet and Jules Bloch said of non-obvious etymologies in general), in contradistinction to the etymologies within a family which are probable through their conformity to phonetic correspondenced. The areal etymologies fit on a sliding scale of plausibility…it is always possible, e.g. to counter a suggestion of borrowing from one of the indigenous language families by suggesting that there has been borrowing in the other direction." (Emeneau, opcit. P. 177).

The most significant aspect of the work done so far related to linguistic areas is that "…it will not be neglected henceforth when the question is raised whether linguistic features, especially those of morphology and syntax, can diffuse across genetic boundaries… Certainly the end result of the borrowings is that the languages of the two families, Indo-Aryan and Dravidian, seem in many respects more akin to one another than Indo-Aryan to the other Indo-European languages." (Emeneau, opcit., pp. 119-120). Thus, after an analysis of Bharat as a linguistic area, a remarkable conclusion emerges: Bh**ā**ratiya languages may be related or akin to one another. And thus, constituting a Prarkrit Family of languages of Bharat. If the areal features are treated isoglosses (e.g. retroflexes, non-finite verb forms such as gerunds, pronominal suffixes), lines encircling the languages which have the features may be drawn on a map. Such a linguistic areal feature line can itself become an isogloss for classifying language families. Pashto of Peshawar has many words of uncertain origin (so Morgenstierne) and is largely indianized in its phonetic system. Similarly, about 40 percent of the agricultural terms in Hindi cannot be traced to any known family and hence get assigned to 'Language X'.

Language families



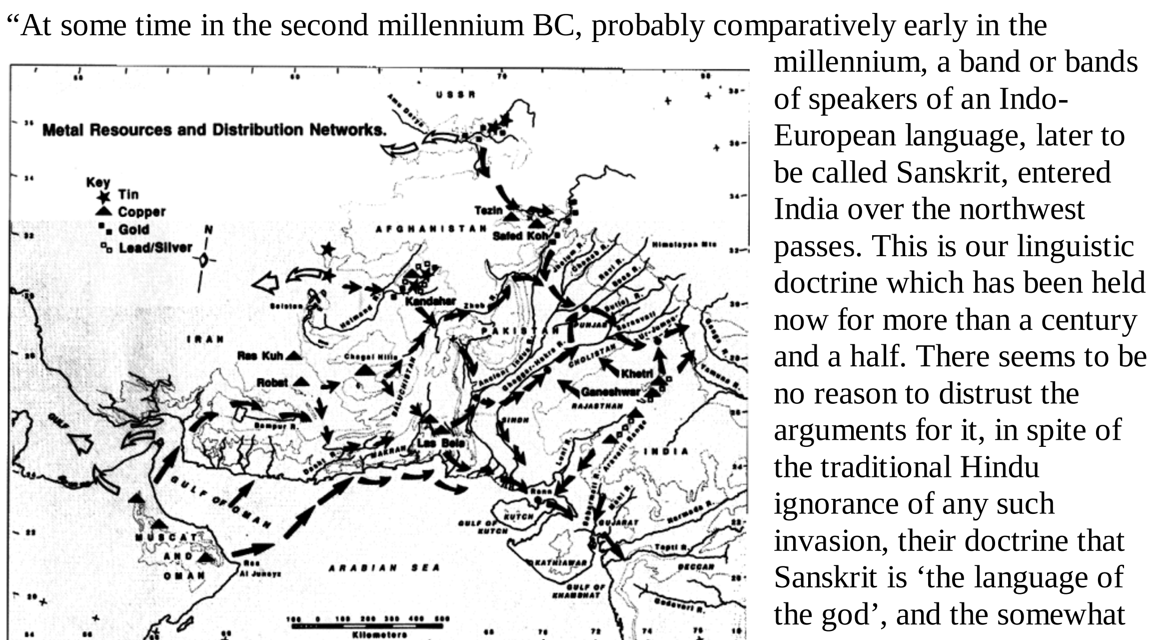
Sea-faring early Sarasvati, Meluhha Culture, Map of Amri-Nal sea coast settlements "…inhabitants were well acquainted with the sea and its resources" (After Fig. 4.124 in G. Possehl, 1999, p. 618)

How is a language family recognized? Many textbooks

cite Greenberg's table of Language relationship of Major European languages (1957). The lexemes used are related to the semantics: one, two, three, head, ear, mouth, nose. (Hans Henrich Hock, 1991, *Principles of Historical Linguistics*, New York, Mouton de Gruyter, p. 10). It is from such rudimentary lexemes that families began to be recognized. It will be a tough call for an linguistics student to question the sanctity of these 'families' already categorized. The only hope is to come up with synonyms such as 'linguistic area' or 'sprachbund'. An ancient bharatiya text record the nature of speech of at least some of the speakers in the following terms: **te 'surā āttavacaso he lavo he lava iti vadantah parābabhūvuh tatrаināmapi vācamūduh upajijn~āsyā sa mlecchastasmānna brāhmaṇo mlecchedasuryā haiṣā vāg** "The Asuras, deprived of (correct) speech, saying he lavo, he lavah, were defeated. This is the unintelligible speech which they uttered at that time. Who speaks thus is a mleccha. Therefore a brāhmaṇa should not speak like a mleccha, for that is the speech of the Asuras."

(**ś**atapatha brāhmaṇa 3.2.1.23-24) Conclusion about the IE 'linguistic doctrine' A linguistic area is a euphemism for a language family. The Indian linguistic area recognized in linguistic studies is in fact a recognition of the Prakrit Family in Bharat, exemplified by the language called mleccha, a Prakrit language. Emeneau who popularized the phrase, 'linguistic area' makes an honest admission of bias in the following terms:

Map of Metal Resources and Distribution Networks (After Fig. 5.20f, Kenoyer, 1998)



"At some time in the second millennium BC, probably comparatively early in the millennium, a band or bands of speakers of an Indo-European language, later to be called Sanskrit, entered India over the northwest passes. This is our linguistic doctrine which has been held now for more than a century and a half. There seems to be no reason to distrust the arguments for it, in spite of the traditional Hindu ignorance of any such invasion, their doctrine that Sanskrit is 'the language of the god', and the somewhat

chauvinistic clinging to the old tradition even today by some Indian scholars. Sanskrit, ‘the language of the gods’, I shall therefore assume to have been a language brought from the Near East or the Western world by the nomadic bands.” (Emeneau, opcit., p. 85).This is the fundamental problem with IE linguistics which holds the entry of nomadic bands into Bharat as the ‘linguistic doctrine’. With such a non-linguistic framework supporting the edifice of IE linguistics, one has reason to be skeptical of the integrity of the discipline itself.



Over 45 sites where objects with epigraphs have been discovered – dated circa 3300 BCE to 1500 BCE. The sites extend from Tepe Gawra on Tigris river on the west to Alamgirpur on Yamuna river on the east; from Altin Tepe in the north -- east of Caspian Sea (south of Turkmenistan) to Maski on Krishna river on the south. (Map after Asko Parpola and Jagatpati Joshi, 1988, *Corpus of Indus Seals and Inscriptions, Volume 1*, Helsinki, Academia Scientiarum Fennica and Map 8 in: Jane R. McIntosh, 2002, *A Peaceful Realm – the Rise and Fall of the Indus Civilization*, New York, Westview Press).

Proto-Bharatiya *Lingua Franca* or *parole* (spoken tongue)

There are hundreds of lexical isolates attested in ‘Indo-Aryan’ which are not found in other branches of Indo-European. These are clearly a substratum layer of Old Indic which was spoken by the people of Bharat on the Sarasvati-Sindhu river basins and on the coastal settlements of Sindhu sāgara (Arabian Sea). Some of these people were called Meluhhan in Mesopotamian texts. The Austroasiatic components of this substratum have to be resolved further in the context of (1) ancestors of Brahui and Elamite; and (2) other Austroasiatic groups such as those in the Brahmaputra (Lohitya)-Meghna-Barak river basins and around the Bay of Bengal.

The *lingua franca* (or parole, spoken tongue) of Bharat circa 5000 years ago is hypothesized as a continuum of dialects, evolving in tandem with the cultural setting and technological innovations. Since the civilization which emerged on and was nurtured on the banks of Rivers Sarasvati and Sindhu continues into the historical periods in Bharat, the language spoken circa 5000 years Before Present can be reconstructed from the languages of present-day Bharat and based on the lexical work done by philologists from

the days of Yaska (circa 6th century BCE) upto the discovery of Bangani in the 20th century.

Mleccha is a word cognate with Pali *Milakku* which means copper. In Sanskrit, *mlecchamukha* means copper [The suffix mukha is borrowed from mu~h 'ingot' (Santali)]. Mlecchita vikalpa mentioned by Vātsyāyana as cryptography, may, therefore, be the work of metal workers and may be related to the writing system found on many copper tablets and inscribed weapons, apart from seals and tablets of the civilization.

Mleccha (Skt.) is *milakkha or milakku* (Pali) to describe those who dwell on the outskirts of a village. (Shendge, Malati, 1977, *The civilized demons: the Harappans in Rigveda*, Abhinav Publications). A milakkhu is disconnected from vāc and does not speak Vedic; he spoke Prakrt. na āryā mlecchanti bhāṣābhir māyayā na caranty uta: aryas (i.e., cultured people) do not speak with crude dialects like mlecchas, nor do they behave with duplicity (MBh. 2.53.8). a dear friend of Vidura who was a professional excavator is sent by Vidura to help the Pāṇḍavas in confinement; this friend of Vidura has a conversation with Yudhiṣṭhira, the eldest Pāṇḍava: **kṛṣṇapakse caturdasyām rātrāv asya purocanah, bhavanasya tava dvāri pradāsyati hutāsanam, mātrā saha pradagdhavyāh Pāṇḍavāh puru ṣar ṣabhāh, iti vyavasitam pārtha dhārtarāṣṭ rāsya me śrutam, kiñcic ca vidurenkoto mleccha-vācāsi Pāṇḍava, tyayā ca tat tathety uktam etad visvāsa kāran.am**: on the fourteenth evening of the dark fortnight, Purocana will put fire in the door of your house. 'The Pandavas are leaders of the people, and they are to be burned to death with their mother.' This, Pārtha (Yudhiṣṭhira), is the determined plan of Dhṛtarāṣṭ ra's son, as I have heard it. When you were leaving the city, Vidura spoke a few words to you in the dialect of the mlecchas, and you replied to him, 'So be it'. I say this to gain your trust.(MBh. 1.135.4-6). This passage shows that there were two groups distinguished by dialects and ethnicity: Yudhiṣṭhira and Vidura – and both could understand mleccha dialect – mleccha-vācāsi.

Melakkha, mleccha ocean island-dwellers

According to the great epic, Mlecchas lived on islands: **sa sarvān mleccha nṛpatin sāgara dvīpa vāsinah, aram āhāryām āsa ratnāni vividhāni candana aguru vastrāṇi maṇi muktam anuttamam, kāñcanam rajatam vajram vidrumam ca mahā dhanam**: (Bhima) arranged for all the mleccha kings, who dwell on the ocean islands, to bring varieties of gems, sandalwood, aloe, garments, and incomparable jewels and pearls, gold, silver, diamonds, and extremely valuable coral… great wealth. (MBh. 2.27.25-26).

Elsewhere in the Great Epic we read how Sahadeva, the youngest of the Pāṇḍava brothers, continued his march of conquest till he reached several islands in the sea (no doubt with the help of ships) and subjugated the Mleccha inhabitants thereof.(1)

brāhmaṇa 2.74.11, Brahma 13.152, Harivaṁśa 1841, Matsya 48.9, Vāyu 99.11, cf. also Viṣṇu 4.17.5, Bhāgavata 9.23.15, see Kirfel 1927: 522:

> **pracetasah putras'atam rājānah sarva eva te // mleccharāṣṭrādhipāh sarve udīcīm diśam āśritāh**

which means, of course, not that these '100' kings conquered the 'northern countries' way beyond the Hindukuṣ or Himalayas, but that all these 100 kings, sons of pracetās (a descendant of a 'druhyu'), kings of mleccha kingdoms, are 'adjacent' (āśrita) to the 'northern direction,' -- which since the Vedas and Pāṇini has signified Greater gandhāra.

Kirfel, W. Das Purāṇa Pañcalakṣaṇa. Bonn : K. Schroeder 1927.

Erythraen Sea and Meluhha

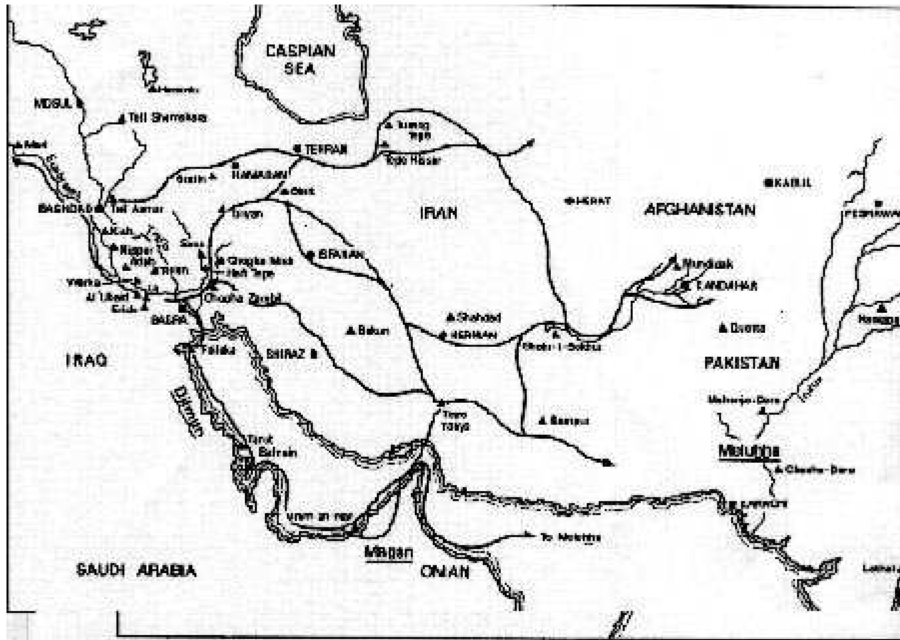
Fifth century BC Greek historian, Herodotus referred to the body of water which linked Africa, the Arabian Peninsula, Iran and the Indian subcontinent as the Erythraen sea. This sea includes the Red sea, the Gulf of Aden, Indian Ocean, Arabian Sea, Gulf of Oman and the Persian or Arabian Gulf.

"The land of Melukkha shall bring carnelian, desirable and precious, sissoo-wood from Magan, excellent mangroves, on big-ships!" said a statement in the Sumerian myth, *Enki and Ninkhursag* (cf. lines 1-9, trans. B. Alster). "In the late Early Dynastic period (about 2500), Ur-Nanshe, king of the Sumerian city-state Lagash, "had ships of Dilmun transport timber from foreign lands" to his capital (modern Tell al-Hiba), just as a later governor of Lagash, named Gudea, did in the mid-twenty-first century. In the early twenty-fourth century, Lugalbanda and Urukagina, two kings of Lagash, imported copper from Dilmun and paid for it with wool, silver, fat, and various milk and cereal products... That these (round stamp) seals were used in economic transactions is proven by the discovery of two important tablets bearing their impressions. One of these tablets was found at Susa, and dates to the first half of the second millennium. It is a receipt for goods, including ten minas of copper (about eleven pounds or five kilograms). The second tablet, in the Yale Babylonian Collection, is dated to the tenth year of Gungunum of Larsa (modern Tell Senkereh), that is, around 1925, and records a consignment of goods (wool, wheat, and sesame) prior to a trading voyage that almost certainly had Dilmun as its goal. Dilmun seals characteristically depict two men drinking what could be beer through straws, or two or three prancing gazelles...a merchant named Ea-nasir, who is identified as one of the ālik Tilmun, or "Dilmun traders"... Ea-nasir paid for Dilmun copper with the textiles and silver that he received from the great Nanna-Ningal temple complex at Ur...The Mari texts contain several references to Dilmunite

caravans...Melukkha was a source of wood (including a black wood thought to have been ebony), gold, ivory, and carnelian...Melukkha was accessible by sea...Sargon of Akkad...boasts that ships from Dilmun, Magan and Melukkha docked at the quay of his capital Akkad...While points of contact with other regions are attested, they can hardly have accounted for the strength and individuality of civilization in the subcontinent...Unmistakably Harappan cubical weights of banded chert (based on a unit of 13.63 grams) are known from a number of sites located around the perimeter of the Arabian GUlf, including Susa, Qalat al-Bahrain, Shimal (Ras al-Khaimah), and Tell Abraq (Umm al-Qaiwain)...an inscribed Harappan shard has been found at Ras al Junayz... Harappan pottery has been found at several sites throughout Oman and the United Arab Emirates...A "Melukkhan village" in the territory of the ancient city-state of Lagash, attested in the thirty-fourth year of the reign of Shulgi (2060), may have been a settlement of Harappans, if the identification with the civilization of the Indus Valley is correct...But...there is little evidence of a Sumerian, Akkadian, or Babylonian presence in the Indus Valley... That the language of Melukkha was unintelligble to an Akkadian or Sumerian speaker is clearly shown by the fact that, on his cylinder seal, the Akkadian functionary Shu-ilishu is identified as a "Melukkhan translator"...the word "Melukkha" appears occasionally as a personal name in cuneiform texts of the Old Akkadian and Ur III periods. "(Potts, D., 1995, Distant Shores: Ancient Near Eastern Trade, in: Jack M. Sasson (ed.), *Civilizations of the Ancient Near East*, Vol. I, pp. 1451-1463).

Mleccha trade was first mentioned by Sargon of Akkad (Mesopotamia 2370 BCE) who stated that boats from Dilmun, Magan and Meluhha came to the quay of Akkad (Hirsch, H., 1963, Die Inschriften der Konige Von Agade, Afo, 20, pp. 37-38; Leemans, W.F., 1960, *Foreign Trade in the Old Babylonian Period*, p. 164; Oppenheim, A.L., 1954, The seafaring merchants of Ur, *JAOS*, 74, pp. 6-17). The Mesopotamian imports from Meluhha were: woods, copper (ayas), gold, silver, carnelina, cotton. Gudea sent expeditions in 2200 BCE to Makkan and Meluhha in search of hard wood. Seal impression with the cotton cloth from Umma (Scheil, V., 1925, Un Nouvea Sceau Hindou Pseudo-Sumerian, *RA*, 22/3, pp. 55-56) and cotton cloth piece stuck to the base of a silver vase from Mohenjodaro. (Wheeler, R.E.M., 1965, *Indus Civilization*) are indicative evidence.

Umma seal impression shows a Meluhha trader in Mesopotamia; there is no comparable evidence of a Mesopotamian trader in Meluhha. Babylonian and Greek names for cotton were: sind, sindon. This is an apparent reference to the cotton produced in the black cotton soils of Sind and Gujarat.



Interaction areas. After Fig. 2 in P.R.S. Moorey, 1994, *Ancient Mesopotamian Materials and Industries*, Oxford, Clarendon Press.

Euphrates River was a link in the maritime trade of the eastern Mediterranean with that of the Gulf and Meluhha beyond. The Sumerian 'colonies' on the northern bend of the Euphrates were the conduits to carry the culture of Uruk to Egypt and linked the head of the Gulf to the Egyptian Delta through the Syrian ports (Moorey, 1990). The famous bilingual inscription of Sargon of Akkad (ca. 2234-2279 BC) sets out in geographical order from south-east to north-west the trading posts: Meluhha, Magan, Dilmun, Mari, Yarmuti, and Ebla: that is, from the Indus to the Taurus -- the Indus which was also linked with central Asia through Afghanistan. (Hirsch 1963: 37-8).

Meluhha and interaction areas

Ubaid: ca. 5500-4000 BCE
Uruk ca. 4000-3000 BCE
Early Dynastic I: ca. 3000-2750 BCE
Early Dynastic II: ca. 2750-2600 BCE
Early Dynastic III: ca. 2600-2350 BCE
Akkadian (or Sargonic): ca. 2350-2000 BCE
Ur III: ca. 2100-2000

Isin-Larsa/Old Babylonian/Old Assyrian: ca. 2000-1600 BCE
Kassite/Mitannian/Middle Babylonian/Middle Assyrian: ca. 1600-1000 BCE
Neo-Assyrian: ca. 1000-612 BCE
Neo-Babylonian: ca. 612-539 BCE
Achaemenid Persian: ca. 539-330 BCE

Vratya

Mleccha-s could be related to the vratya-s of Magadha. Reference to Satvants of the Chambal valley may relate to the term, *satvata*, used in the *pañcarātra* tradition and *vrātya-s* are associated with the people of Magadha.

"The literature is replete with the names of clans. The most powerful among them, commanding the greatest respect, was the Kuru-Pāñcala, which incorporated the two families of Kuru and Puru (and the earlier Bharatas) and of which the Pāñcala was a confederation of lesser-known tribes. They occupied the Upper Doab and the Kuruksetra region. In the north the Kamboja, Gandhara, and Madra groups predominated. In the middle Ganges Valley the neighbours and rivals of the Kuru-Pāñcalas were the Kasi, Kosala, and Videha, who worked in close cooperation with each other. The Magadha, Anga, and Vanga peoples in the lower Ganges Valley and delta were outside the Aryan pale and regarded as mlecchas. Magadha (Patna and Gaya districts of Bihar) is also associated with the vratya people, who occupied an ambiguous position between the aryas and mlecchas. Other mleccha tribes frequently mentioned include the Satvants of the Chambal valley and, in the Vindhyan and northern Deccan region, the Andhra, Vidarbha, Nisadha, Pulinda, and śabara. The location of all these tribes is of considerable historical interest, because they gave their names to the geographic area."

http://www.britanica.com/bcom/eb/article/9/0,5716,121169+2+111197,00.html

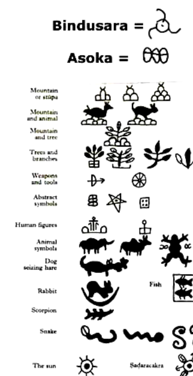
This leads to the formulation of reasonable deductions:

A cooperative society and a continuous culture had existed right from the chalcolithic-age through the bronze-age to the historical periods on the Sarasvati-Sindhu doab and the rest of India.





A remarkable example of the continuity of the metallurgical tradition of Sarasvati civilization comes from a technique used to make bronze statues, a technique called *cire perdue* (lost-wax method). The bronze statue of a woman wearing bangles and holding a small bowl in her right hand, Mohenjo-daro (DK 12728; Mackay 1938: 274, pl. LXXIII, 9-11); was made using *cire perdue* (lost wax) method, a method used by viśvakarma-s in Swāmimalai to make bronze figurines of deities – viśvakarma tradition lives on.



[Pl. 39, Tree symbol (often on a platform) on punch-marked coins; a symbol recurring on many tablets of SSVC].



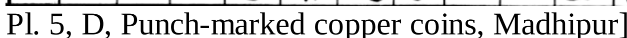
[Pl. 2, N: Sahet-Mahet punch-marked coins symbols]



[Pl. 3, M,N: Singavaran punch-marked coin symbols]



Pl. 5, A to C, Amaravati punch-marked coin symbols]



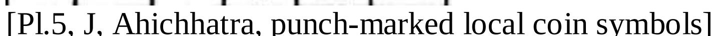
Pl. 5, D, Punch-marked copper coins, Madhipur]



[Pl. 5, E, Uninscribed cast coins]



[Pl. 5, F, G, Eran punch-marked local coin symbols]



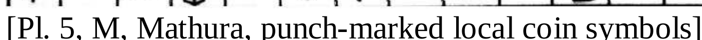
[Pl.5, J, Ahichhatra, punch-marked local coin symbols]



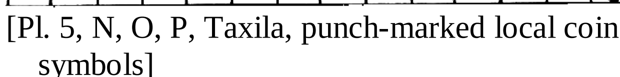
[Pl.5, K, Kada, punch-marked local coin symbols]



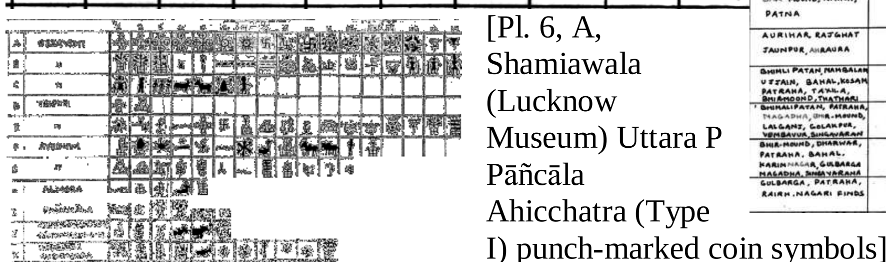
[Pl. 5, L, Kanauj, punch-marked local coin symbols]



[Pl. 5, M, Mathura, punch-marked local coin symbols]



[Pl. 5, N, O, P, Taxila, punch-marked local coin symbols]

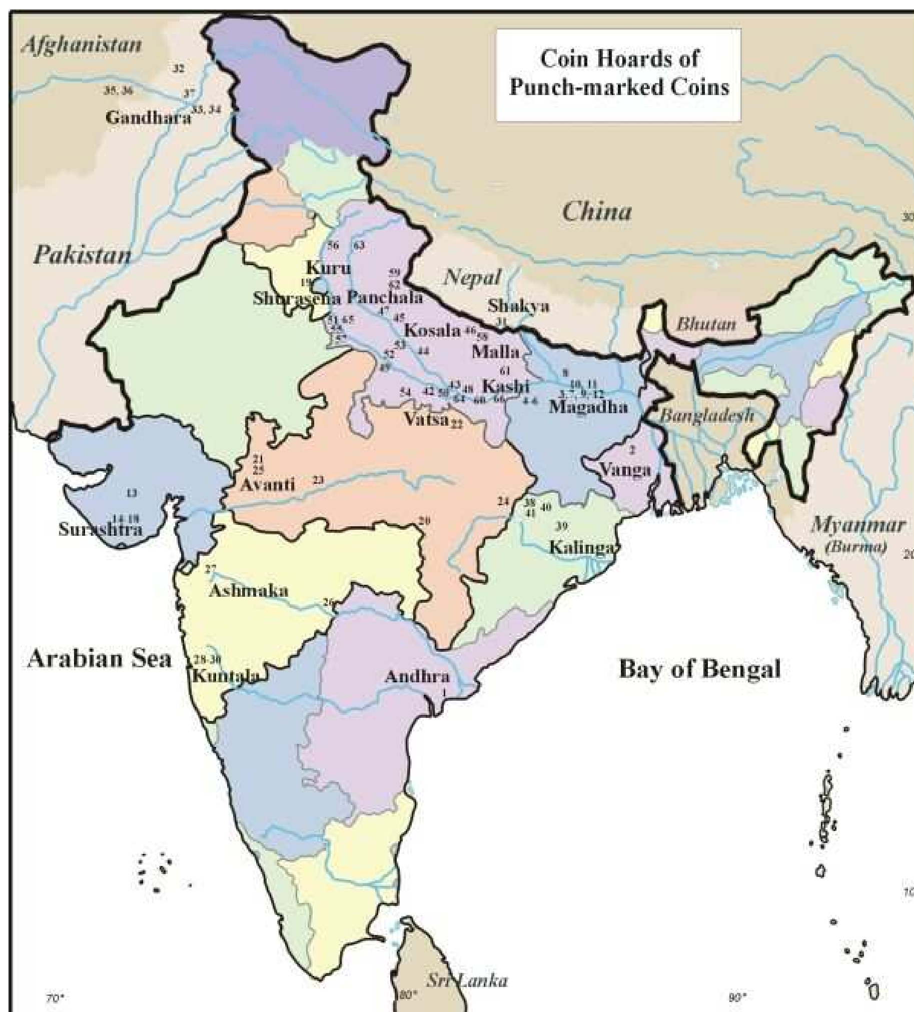


[Pl. 6, A, Shamiawala (Lucknow Museum) Uttara P Pāñcāla Ahicchatra (Type I) punch-marked coin symbols]

[Pl.8, Local Tribal coin symbols: Ujjayini, Tripuri, Ayodhya, Almore, Pāñcāla, Arjunāyana (1-3), Rājanya (3,6,8), Uddehika, Audumbara, Ku□inda, Kuluta, V□□□i, Yaudheya, K□atrapa, śātavāhana]

Tiwari notes: "Recent excavations in Uttar Pradesh have turned up iron artefacts, furnaces, tuyeres and slag inlayers radiocarbon dated between c. BC 1800 and 1000. This raises again the question of whetheriron working was brought in to India during supposed immigrations of the second millennium BC, or developed independently." Thus circa 19th century BCE, when the Sarasvati river was in the throes of desiccation, there was emergence of iron age in Ganga river basin. The sites excavated were: Lohra Dewa, Raja Nal Ka Tila and Malhar

This twin phenomenon of the rise of the bronze age in Saptasindhu region and the iron age in Ganga river basin explain the find spots of punch-mark coin hoards.

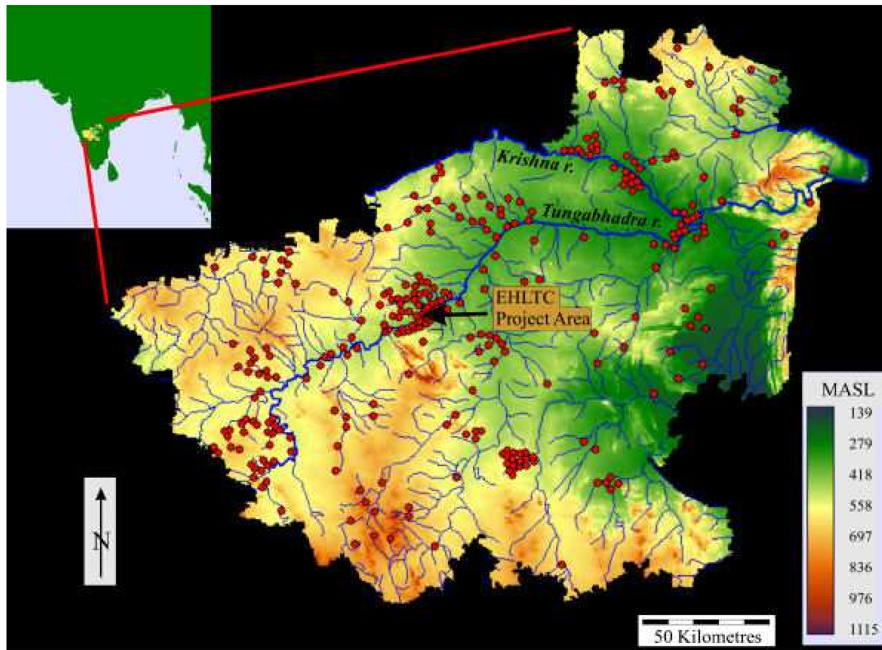


Map of punch-marked coin hoard find-spots (After Rajgor)

Consistent with the positing of a linguistic area by Kuiper, Burrow and Masica, Peter Edwin Hook, 2002, The compound verb in Munda: an areal and topological view, *Language Sciences*, Vol. 13, Issue 2, 1991, pp. 181-195 observed: "A study of six Munda languages shows that the syntactic category, compound verb (which alternates with simple verb) may be identified in each one of them. However, while compound verbs in South Munda form systems which closely resemble those found in adjacent Indo-Aryan and Dravidian languages, North and Central Munda feature compound verbs of a very different sort. The South Munda type seems to have arisen as the result of cross-linguistic diffusion from its neighbours while that in North and Central Munda owes its origin to independent developments." http://tinyurl.com/cwk4hf

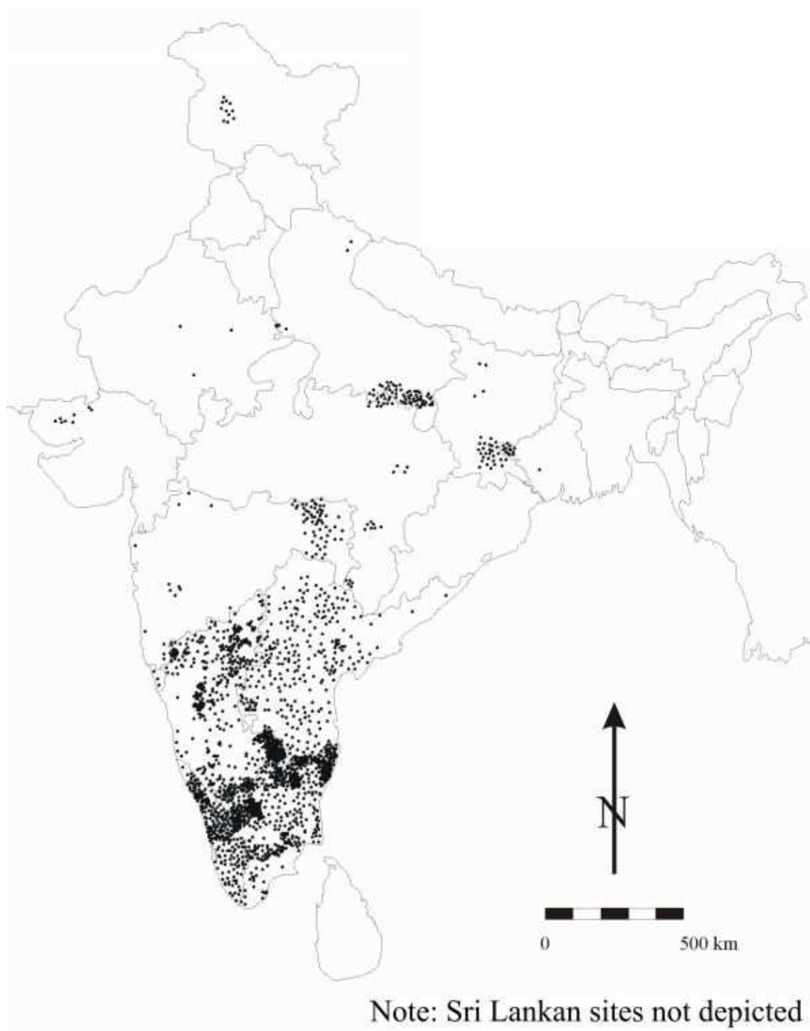
S. Paramasivan, 1944, Classification of prehistoric sites, No. 12, Dec. 1944, ASI. http://www.scribd.com/doc/11470293/Classification-of-Prehistoric-Sites "Bruce Foote, de Terra and others have shown that India is rich in the remains of the earliest phases of the stone age culture. These remains occur in the Kashmir valley, in the alluvia of the Narbada, the Sabarmati, the Godavery and the Krishna in South India. In addition, there are upper palaeolithic, Azilio-Tardenoisean and Capsian industries at Chakradharpur, geometrical microliths of the Tardenoisean variety at Juboulpur and Magdalenian industry of blades and bone implements with a fauna, some of which have become extinct, in the Billa Surgam caves of Kurnool district. The Campignian stage of culture comes from Banda and Murpha, mid-neolithic phase from Bellary, which merges into the iron age, and shouldered celts and implements and weapons of copper, bronze and iron from Chota Nagpur and Assam. There are also countless megaliths which range from the Neolithic to the historical times."

"The processes involved in the gradual transformation of Neolithic communities into early Iron Age societies are somewhat more accessible, especially after recent excavations at Sanganakallu-Kupgal. The period witnessed an intensification of exchange and production activities, as well as the gradual emergence of part-time craft specialists. As exchange networks expanded, the south Deccan plateau was gradually drawn into a world system, in which trade along the Indian Ocean rim became increasingly regular and important. Such changes encouraged a shift from the egalitarian societies of the Neolithic, with their communal rituals and ritual mode of production, to the much more hierarchical societies of the Iron Age, which featured an emphasis on elite ritual, specialized production and systematic warfare." (Nicole Boivin, Dorian Fuller, Ravi Korisettar and Michael Petraglia, 2007, First farmers in South India: the role of internal processes and external influences in the emergence and transformation of south India's earliest settled societies, in: *Pragdhara (Journal of the Uttar Pradesh State Archaeology Department)* 2007, special section on 'First Farmers in Global Perspective, edited by Rakesh Tewari. http://tinyurl.com/cbmvss



Iron Age sites in the central Karnataka/western Andhra Pradesh study area.

Megalithic monuments in India (over 2000 megalithic cemeteries have been documented in South Asia, the vast majority being located in South India and Sri Lanka)



http://www.antiquity.ac.uk/ProjGall/brubaker/index.html *Antiquity* Vol 82 Issue 317 September 2008 Regional perspectives on Megalithic landscapes: investigating the socio-political dimensions of Late Prehistoric sites in central Karnataka and west Andhra Pradesh, India by Robert Brubaker



Adichanallur and other megalithic sites in India

Megalithic age 1000 to 300 BCE

"This is the time when man started using iron, a better metal harder than copper, for making tools and weapons. In India, there is evidence in evidence in several localities to say that this age started from about 1100 BCE or a little earlier. Unlike in north India, the Iron Age culture in peninsular India is marked by Megalithic burial sites, which are found in several hundreds of places. For the first time most of south India is studded with Iron Age sites; in other words, most of the macro-region, from Nagpur in the north to Kanyakumari in the extreme south was populated by the Iron Age folk during the course of the first millennium BCE. Still there is much to be learnt regarding the chronology of these sites. On the basis of some excavations, and on the basis of the typology of the burial monuments, it has been suggested that there was a gradual spread of the Iron Age sites from the north to the south. The southern sites are therefore considered chronologically later than the northern sites…Iron technology was highly developed and shows a high degree of uniformity through the length and breadth of peninsular India. Both iron tools and weapons show quite a variety. The tools that could be used for a variety of agricultural and other purposes included axes with crossed iron bands for hafting, varieties of flanged spade, hoes, pick axes, sickles or bill-hooks, wedges and crowbars, knives, chisels, and adzes. The weapons were daggers, swords, arrowheads, spearheads, and tridents. Horse furniture like snaffle bits and stirrup was also conspicuous in certain burials. The widespread nature of most of these objects and their uniformity over a wide area would suggest that there had developed a good trade network connecting various parts of south India and even outside…One peculiar feature of communication in Megalithic sites is a large number of graffiti marks made on pottery. A striking thing about the graffiti is that several sites separated by long distances have yielded some almost identical graffiti. And some of the graffiti seem to have survived from earlier cultures, right from the Indus valley civilization of the third and second millennia BCE…Ancient history 300 BCE to 200 CE. Primitive cults and practices dominated the religious life of the people. Animistic worship was the most popular practice, so too was the worship of ancestors and heroes. Several of the Megalithic burial practices continued in this period also. New religious ideas from the north were slowly percolating into south India. Jainism and

Buddhism, the two great ethical, non-orthodox religions from the Gangetic valley were ardently received along with the orthodox Vedic religion with all its fire rituals." http://tinyurl.com/dhn5hp

"From the geographical spread of Neolithic cultures in the Indian sub-continent, Bridget and Raymond Allchin concluded that Saurashtra, eastern Rajasthan and Malwa appeared to have acted as centres of diffusion of post-Harappan culture in the rest of India. Locationally, these regions were situated at the junction of routes and it is likely that they became scenes of intermingling of different cultural traits – Harappan as well as West Asian. A synthesis of these traditions took place in these nodal regions from where they spread to other parts of India. This diffusion of cultural traits possibly took three routes: a southern route passing through Maharashtra and the Deccan, an eastern route passing through the Narmada and Betwa valleys and a northern route leading to the Ganga valley. It may be assumed that the late Harappan site of Rupar (Punjab) and Alamgirpur (Ganga-Yamuna Doab) played a significant role in the diffusion of Harappan (and post-Harappan) influences in the Ganga valley. Sites in Maharashtra and the Deccan on which extensive archaeological work has been done bear testimony to this diffusion theory. Sites in the Tapi valley, viz., Prakash and Bahai as well as those in the Godavari and Krishna valleys, viz., Jorwe, Nevasa, Daimabad, Chandoli, Sonegaon and Bahurupa have yielded evidence of a stone industry in association with copper and bronze tools and pottery. These cultural phases have been dated as c. 1700-1050 BCE. The evidence collected from Eran, on the Betwa river, and Tripuri, on the Narmada, indicates the possible routes through which the Malwa influences got diffused into the central and eastern regions of India. These chalcolithic settlements have been assigned to the period around 1500-1280 BCE. Archaeological remains also show a transition towards the Iron Age around 1040 BCE…*Angutar Nikaya*, the first Buddhist text, mentions the following 16 mahajanapadas (śo□asa mahājanapadas): Kuru, Panchala, Kosala, Kasi, Malla, Vaiji (Vrijji), Magadha, Anga, Surasena, Matsaya, Chedi, Vatsa, Avanti, Asmaka, Gandhara and Kamboja. " (Bagaulia, *Ency. Of Human Geography,* Anmol Publications Pvt. Ltd., pp. 57-59)

What Hemachandra calls deśi – in Deśināma mālā -- is indeed a mleccha continuum. This helps posit the hypothesis: Language X (Colin Masica) + proto-Munda = proto-mleccha. The glosses of many Bharatiya languages of the Sarasvati Civilization linguistic area are likely to provide evidences for the continuity of the words used during the Sarasvati Civilization mature periods which resulted in the production of Sarasvati hieroglyphs. Murray B. Emeneau defined a linguistic area as "an area which includes languages belonging to more than one family but sharing traits in common which are found not to belong to other members of (at least) one of the families."

Journal of the Bihar and Orissa Research Society, December 1919 [Including: Walsh, EHC, An examination of a find of punch-marked coins in Patna city, with reference to the subject of punch-marked coins generally (pp. 16-72); Crooke, W., Secret messages and symbols used in India (pp. 451-462); Walsh, EHC, An examination of fifty-eight silver punched marked coins found at Gorho Ghat (with plates) (pp. 463-494)] http://www.archive.org/details/journalofbiharre05bihauoft

Hieroglyphs used on punch-marked coins, Begram ivories, jaina āyāgapa□□as and on sculptures include the following:

- Mountain-peak
- Svastika
- Tethering rope (tying up two fish into one body of fish with two fish-tails pointed upwards as on Sanchi stupa and some ayagapattas, in what is referred to as part of srivatsa)
- Garland of flowers
- Twin-fish (sometimes with a garland of flowers)
- Fish-tail (kol.el 'smithy, temple'; kolli 'fish'; xolā 'tail')
- Fish (ayo 'fish'; ayas 'metal, iron')

"At a relatively early period the lotus may have represented Brahmā, for he is the successor of Prajāpati, who is born of the waters. The lotus pedestal appears already in Maurya or śunga terracottas, and at sāñcī and bhārhut as the sat of māyādevī-Lakṣmī, and is very soon employed in the case of all divine beings to denote miraculous birth and apparitional character; standing alone, in early Buddhist art, it seems to represent Nativity. Such symbols (rūpa) as are above referred to are found in great variety on the punch-marked coins (kāhāpaṇa, kārṣāpaṇa, purāṇa) which were in general use from about 600 BCE up to the beginning of Kuṣāṇa period or somewhat later, on the closely related native cast and die-struck coins of the latter part of the same period, and also on some of the Indianised coins of the Indo-Greek and Indo-Parthian kings of the Panjāb e.g. Agathokles. Some of the same symbols appear in Maurya, śunga art at Pāṭaliputra, Bhārhut, Sāñcī, Mathurā and in Orissā, and together with some new forms on Kuṣāṇa and Gupta sealings from Bhīṭā, Basāṛh, and many other sites, and on pādukas (Buddha-pada, Viṣṇu-pāda) and aṣṭamangala of various periods. (For symbols on pādukas see Fournereau, 2; Coomaraswamy 9(4) pl.XXXVII; Smith,1; and fig.71.) With them can be associated, as belonging to the same kind of hieroglyphic art, the banner cognizances of gods and heroes mentioned in the Epics, those still used by Paṇḍās at tīrthas to facilitate recognition by visiting pilgrims, tattoo marks ancient and modern, cattle-brands, and folk art generally. (For tattoo marks see Cunningham, 2 and Luard,1). A few of the types appear in Western Asia, and the svastika is of world-wide distribution. In determining the nature of the objects represented, all these, together with the formulae commonly employed in Indian art of less abstract types, must be considered; had this been done at first, the now universally recognized 'mountain' would never have been mistaken for a

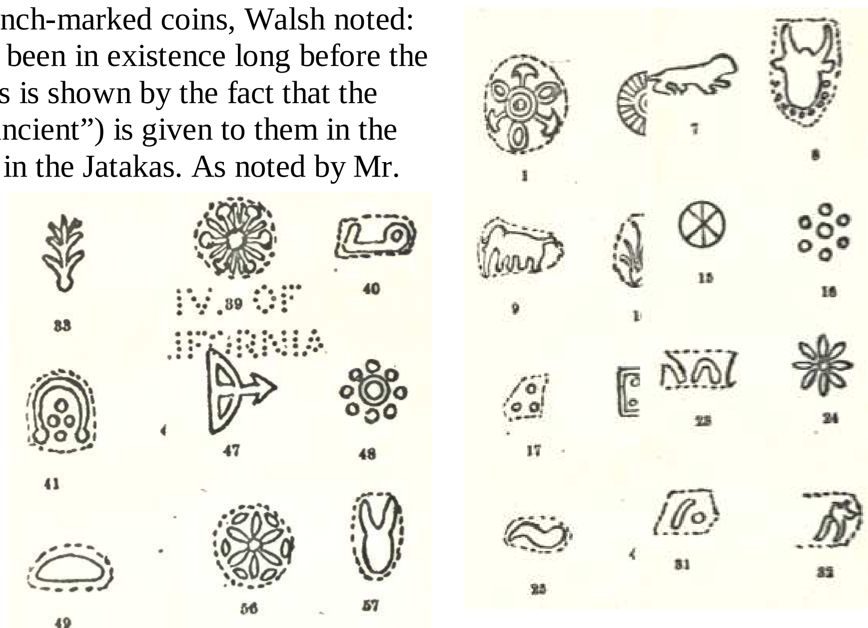
stūpa.(The mountain represented by 'arches' (peaks) is found in Mesopotamia and throughout the ancient world, as well as in later Indian and Central Asian and Chinese art, cf. Glotz, G., pp. 74-79, and Coomaraswamy, 8, pl. II cf. Burgess, 7, pl. LV.j.) The special religious meanings possible for each symbol must be considered in the light of Vedic and Epic references to avatārs and attributes, and to later and modern iconography, remembering always that the vocabulary was equally applicable to all sects, Brāhma□as, Buddhists and Jains each employing them in senses of their own." (Ananda K. Coomaraswamy, 1927 (Repr. 2003), *History of Indian and Indonesian Art*, Kessinger Publishing, pp.43-44)

Scholars have noticed the connection between Indus and early historic weight systems which were also used on punch-marked coins.(Mainkar VB, 1984, Metrology of the Indus Civilization, in: *Frontiers of the Indus Civilization*, BB Lal and SP Gupta ed, New Delhi, Books and Books, 141-151; Srinivasan, S., 1979, *Mensuration in Ancient India*, Delhi, Ajanta Publications; Singh, P.,1986, The Narhant hoard of punch marked coins: a preliminary report. *The 10th International Congress of Numismatics*, London, International Association of Professional Numismatists, 465-469.). Mainkar has also noted that the weight of the coins accords with the system described in the Arthas'astra of Kautilya.

1 gunja (abrus precatorius seed)	= .109 gms
8 gunja	= .871 gms (small Indus weight)
32 gunja	= 3.4 gms (fourth Indus weight) (karshapana)
1 coin	= 32 gunja = 1 dharana
10 dhara□a	= 320 gunja = 34.8 gms. = 1 pala (JM Kenoyer in:

George Erdosy, 1995, *The Indo-Aryans of Ancient South Asia*, Walter de Gruyter, p. 238).

(EHC Walsh, 1919, An examination of a find of punch-marked coins in Patna city, with reference to the subject of punch-marked coins generally, *JBORS*, Pl. IV, p. 72). After examining 108 punch-marked coins, Walsh noted: "This coinage has been in existence long before the time of Buddha, as is shown by the fact that the name 'purana' ("ancient") is given to them in the stories of Buddha in the Jatakas. As noted by Mr. Vincent Smith, the fact that they have been found in one of the very ancient earthen tumuli at Lauriya-Nandangarh in Champaran and in the ancient tombs known by



the name of Pandu-kulis in Coimbatore shows that they go back to very early times. The latter fact, may, possibly, show that this coinage originated during the early Dravidian civilization…The essential part of the coinage was the rupa or marks stamped on them. Mr. R. D. Bhandarkar refers to the expressions such as rūpām chhinditvā kata māsako used by the Commentary Sāmanta Pāsādikā on the Nisaggiya pāchitiya. It is these marks stamped on the purāṇa or kārṣāpaṇa, which constituted the coinage…Mr. Bhandarkar quotes a passage from the Visuddhimagga of Buddhaghosha on the subject and notes: 'The purport of it is to describe how a lot of coins lying on a wooden slab would strike a boy, a rustic and a shroff; and we' are told that the boy would notice simply that some coins were oblong, some round and some elongated in shape, that the rustic would know all this and also that the coins were like gems, worthy objects of enjoyment to mankind, but that the shroff not only would be conversant with all these matters but also would be in a position to decide after handling the coins in a variety of ways, which of them were struck at which village, borough, town, mountain and river bank and also by what mint master'…Another group of devices noticeable on kārṣāpaṇas is the auspicious marks of which svastika and nandipāda are the most conspicuous. Both these are met with also in old cave inscriptions, which either begin or end with them…The Artha śāstra, in referring to the duties of the Collector General of Revenue, mentions, together with taxes and other matters, rupika, the meaning of which appears to be premia or seignorage on coins…that the reason for the mark of the *sangha*, or village union, in which the coin was in use may be that the local authority affixed its marks on every coin in which it had levied seignorage, and that no coin on which seignorage had not been so levied was allowed to circulate within its jurisdiction…In this connection Mr. KP Jayaswal had called my attention to a rule laid down by Pāṇini; 'sangh = ānka lakṣaṇeṣu = añyañinām = an." The meaning of which is 'an.-suffix takes place in nouns ending in an~, yan~ in the case of (i.e. to denote) ankas and lakṣaṇas of sanghas" which shows that a Sangha had its anka or lakṣaṇa, which latter Mr. Jayaswal would identify with lānchhana or heraldic crest of later Sanskrit…In this connection Mr. Jayaswal also notes that the Harappa seals, which are found in a well-known republican area, have the permanent figure of a peculiar animal, with changing legends, in which the animal may be lakshan.a and the legend correspond to the anka…The number of different marks found on punch-marked coins is very great. Theobald has described and figured 277 which he obtained from the examination of 150 coins (*JASB*, Part I, 1890, po. 268, Plates VIII-XL). He subsequently revised that list by excluding the symbols on the later coinage of Ujain and Eran, which reduced the number of symbols of the older coinage to 247, to which he added further marks, making a total of 342…Theobald's Fig. 223 which he described as 'Jackal looking up at a tree, protected by a railing'…" (Walsh, EHC, 1919, *JBORS*, pp. 22-32) (loc. cit., RD Bhandarkar, 1914, 'Excavations at Besnagar', *ASR* 1913-14, p. 210)

"Jackal looking up at a tree" is a pictorial motif which is a Sarasvati hieroglyph.



The tablet, found (2000-2001) in the Trench 54 area on the west side of Mound E in Harappa (Slide 185 Kenoyer)

http://www.harappa.com/indus3/185.html "a man in a tree with a tiger looking back over its shoulder." Other glyphs shown: gharial, rhinoceros, tree; spoked-wheel, person holding back rearing tigers; elephant.

Writing system developed by literate artisans

Selected 8 slides presented by Asko Parpola (2007) have been included in the ppt presentation which complements this monograph for rebus readings of many epigraphs. The slides establish that the writing system of 'Indus script' is representation of speech, and is not an arbitrary assemblage of unspoken, unspeakable, arbitrarily selected symbols by 'illiterates' (as some have alleged without explaining the functions served by each selected glyph).

The onus is on such "Harappan illiteracy proponents" to avoid acts of faith, but explain how the glyphs relate to heraldry or agriculture or any myths, magic, rituals, religious, socio-political or economic functions of the creators of the glyphs.
http://www.ejvs.laurasianacademy.com/ejvs1102/ejvs1102article.pdf

Hieroglyphs and frequencies of occurrence on Sarasvati epigraphs

One-horned heifer with a pannier	1159 + 5 (with two horns)
Standard device	19 + ca. 1100 occurrences in front of the one-horned heifer
Shor-horned bull	95 +2 (in opposition)
Zebu or Bra_hman.i bull	54
Buffalo	14
Elephant	55 + 1 (horned)

Tiger (including tiger looking back) 16 + 5 (horned)

Boar	39 + 1 (in opposition)
Goat-antelope	36 + 1 (flanking a tree)
Ox-antelope	26
Hare	10 +1 (object shaped like hare)
Ligatured animal	41
Alligator	49
Fish	14 (objects shaped like fish); fish also a sign



Frog	1
Serpent	10
Tree	34 + 1 (leaves)
Dotted circle	67
Svastika	23
Endless-knot	4
Double-axe	14 (inscribed objects shaped like axe)

<u>Rimmed narrow-necked jar</u> 1395



Fish signs 1241



Leaf signs	100
Spoked wheel	203



Cart frame + wheels	26
Sprout (or, tree stylized)	800
Water-carrier	220
Scorpion	106
Claws (of crab)	130 + 90 (shaped like pincers)
Arrow (spear)	227
Rimless, wide-mouthed pot	350

Fully hieroglyptic nature of the writing system (mlecchita vikalpa) is presented with examples of pictorial motifs and signs used on epigraphs and with intimations of continuing tradition of glyphs on punch-marked coin devices. (Powerpoint slides)

Decoding the most frequently-occurring Sarasvati hieroglyphs in mlecchitavikalpa: 1.rim of jar and 2.pannier on one-horned heifer

Two glyphs of most frequent occurrence are: rim of jar and pannier on one-horned heifer. The rim (kanka) of jar connotes the fire-altar of a miner (khanaka). The pannier (kamarsāla) connotes the workshop of a smith (karmāraśāla). The heifer connotes tam(b)ra 'copper'; hence, the composite glyph connotes coppersmith's workshop.

Richard Burton translates 'mlecchita vikalpa' as one of the 64 arts mentioned in Vatsyayana's Kamasutra as follows: "the art of understanding writing in cypher, and the writing of words in a peculiar way." Writing in cypher. Vikalpa is an alternative representation of language, in this case, spoken words expressed in writing (cypher). Two other language-related arts listed by Vātsyāyana are: deśa bhāṣā jñānam and akṣara mu ṭika kathanam (that is: knowledge of dialects of the land and story-telling using fingers and wrists, that is, hand-gestures and finger-gestures forming mudra-s). In this triad, it is logical to interpret mlecchita vikalpa as cypher writing made by mleccha.

http://www.bharatadesam.com/literature/vatsyayana_kamasutras/vatsyayana_kamasutra_3.php

"In his commentary on the Kāma-sutra, Yaśodhara describes two kinds of mlecchita-vikalpa. One is called kautilyam in which the letter substitutions are based upon phonetic relations -- the vowels become consonants, for example. A simplification of this form is called durbodha. Another kind of secret writing is muladeviya. Its cipher alphabet consists merely of the reciprocal one with all other letters remaining unchanged. Muladeviya existed in both a spoken form -- as such it figures in Indian literature and is used by traders, with geographical variations -- and a written form, in which case it is called gudhalekhya." (David Kahn, *The Code-Breakers: The Story of Secret Writing*, New York, Macmillan, 1967, pp. 74-75)

Pairwise Combinations					Frequency
					←Fish in positional order
					44
					24
					28
					11
					14
					6
					8
					7
					4

Figure 20: Positional Order of the "Fish" Signs

Some mleccha words in Sarasvati hieroglyphs

(Fig. 20 in Michael Pieter Kovink, 2008, *The Indus script -- a positional-statistical approach*, USA, Gilund Press, ISBN 978-0-6151-8239-1showing varieties of fish signs and positional sequencing on epigraphs.)

keṇṭa 'fish'; **ke~ṛe~** brass or bell-metal

ayo, hako 'fish'; **a~s** = scales of fish (Santali); rebus: aya = iron (G.); **ayah**, **ayas** = metal (Skt.)

Bronze age trade and writing system of Meluhha (Mleccha) evidenced by tin ingots from the near vicinity of Haifa (For Bronze Age Trade Workshop in 5 ICAANE, April 5, 2006) including Appendix B Mahabharata reference to mleccha (with devanagari text and translation in English)

1 **khanaka** m. one who digs , digger , excavator MBh. iii , 640 R. ; a miner L. ; a house-breaker , thief L. ; a rat L. ; N. of a friend of Vidura MBh. i , 5798 f. ;

(%{I}) f. a female digger or excavator Pa1n2. 3-1 , 145 Pat. ; iv , 1 , 41 Ka1s3.

2 **khānaka** mfn. ifc. one who digs or digs out Mn. viii , 260 (cf. %{kUpa-}) ; m. a house-breaker , thief VarBr2S. lxxxix , 9 ; (%{ikA}) f. a ditch Gal.

கனி&sup5; kaṉi

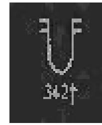
, *n.* < *khani*. **Mine;** பொன்முத லியன எடுக்கும் சுரங்கம். கரைகனிப் பொருளும் (திருக்காளத். பு. 11, 22).P 838 Tamil lexicon

CDIAL 3810 **khaná—** 'digging' AV. [√khan] K. *khan* m. 'hole, hollow made in grain, breach in a river bank'; Ku. gng. *khaṇ* m. 'digging'; N. *khan—jot* 'tillage'.
CDIAL 3811 **khánati** 'digs' RV. 2. **khānayati** 'causes to dig' ŚāṅkhŚr. [√khan] 1. Pa. *khanati*, Pk. *khaṇaï*; Paš. lauṛ. *khan*—, ar. weg. *xan*— 'to pull out or off, flay', weg. also 'to dig'; K. *khanun*, 'to dig', S. *khaṇaṇu*, Ku. *khaṇṇo*, N. *khannu*, B. *khanā*; H. *khannā* 'to dig, scrape'; G. *khaṇvũkhaṇṇẽ*, Ko. *khaṇūka*. — Deriv. Pa. *khanāpēti* 'causes to be dug', N. *khanāunu*. — X *kṣuráti*: P. *khuṇṇā* 'to dig, carve, cut'; — X *kōtr— q.v. 2. Pa. *khānēti* 'causes to be dug', Pk. *khāṇia*—; Kho. (Lor.) *kh* e *neik*, *kan°* 'to dig', A. *khāniba*, M. *khāṇṇẽ*, Si. *kaninavā*, pret. *kännā*. — Deriv. Aś. shah. man. *khanapita*—, gir. kāl. *khānāpita*—, NiDoc. *khaṇavide*, A. *khanāiba*, OSi. absol. *kaṇavaya*. — Gy. pal. *kánărḳa̐năr* 'strips', eur. hung. *xan*—, gr. *xand*- (pret. *xanló* < *khānita*—) 'to dig' rather than < kháṇḍ- atē. — M. *khā̃dṇẽ* 'to dig' X *khōdd—? Addenda: **khánati**. 1. Garh. *khaṇnu* 'to dig'; Md. *konnanī***khānayati:** A. also *khāndiba* 'to dig' (X *khōdd—?). 'to dig', M. 'plucks, tears', 'digs'. 2.
CDIAL 3812 **khanana—** n. 'act of digging' Bhartr̥. [√khan] Pa. *khaṇana*— n., Pk. *khaṇaṇa*— n., OSi. *kaṇanu*; - deriv. K. *khananāwun* 'to cause to be dug'.
CDIAL 3813 **khaní—** 'digging up' AV., f. 'mine' VarBr̥S. 2. X gúhā—1. [√khan] 1. Pk. *khaṇi*— f. 'mine'; NiDoc. *kheni* 'pit'; A. *khani* 'mine'; Or. *khaṇi* 'large pit for storing paddy', *khaṇā* 'large and deep pit, trench'; H. *khan* m. 'mine', *khanī* f. 'pit in which husked rice or other grain is kept'; M. *khaṇ* f. 'mine, quarry'. 2. Sh. (Lor.) *khōh*, *kho* 'cave, shelter of overhanging cliff'; P. *khoh* f. 'hole, cavern, pit'; OAw. *khoha* 'cave'; H. *khoh*, *kho*, *khau* f. 'hole, pit, cave'; G. *kho* f. 'cave'. *kūpakhani—.
CDIAL 3814 **khanítra—** n. 'digging tool' RV., °*trā*— f. R., °*trikā*— f. lex., °*traka*— n. 'small do.' Pañcat. [√khan] Pa. *khanittī*— f., Pk. *khaṇitta*— n.; N. *khanti* 'spud', A. *khanti*; B. *khantā* 'long—handled spade', *khuntikhurpā* < kṣurapra—); Or. *khaṇatā*, °*tī*, *khaṇantā*, °*tī* 'narrow spade'; Bi. *khantī* 'pointed iron instrument for tapping well—spring'; Mth. *khana*tī 'hoe'; Bhoj. *khantā* 'digging instrument'; H. *khantī* f. 'spud'; M.

khaṇṭẽ n. 'instrument for digging holes'. 'long- handled spud'
CDIAL 3873 **khāni—,** °*nī*— f. '*digging instrument'. 2. 'mine' lex. [For twofold meaning 'digging and result of digging' cf. *khaní*— and *khātra*—. — √khan] 1. Kho. *khen* 'mattock, hoe'. 2. Pk. *khāṇī̆*— f. 'mine'; Gy. as. *xani*, eur. sp. *xaní* f., boh. *xaníg* f., gr. *xaníng* f. 'well'; K. *khān* f. 'mine'; S. *khāṇi* f. 'mine, quarry, water in a pit'; L. *khāṇ* f. 'mine', P. *khāṇī* f., Ku. *khāṇ*, N. *khāni;* A. *khāni* 'quantity'; B. *khānī* 'mine'; Bi. *khān* 'cavity in oil or sugar mill', *maṭi—khān* 'clay pit'; Bhoj. Aw. lakh. *khāni* 'mine'; H. *khān* f. 'mine, quarry, abundance'; G. *khāṇi* , °*ṇī* f. 'mine, source', M. *khāṇ*, °*ṇī* f.; OSi. *kani* 'cave, cell', Si. *käna* 'bunch (of fruit), multitude'. — Kho. *ken* 'cave, hollow in cliff', Phal. *kēṇ* ← Ir.?
CDIAL 3874 **khānya—** 'anything being dug out' Pāṇ. [Cf. *khánya*- 'coming from excavations' TS. — √khan] Pk. *khaṇṇa*— 'fit for digging', n. 'ditch'; B. *khānā* 'pit, pond, ravine'.

The rim of a jar is kaṇḍ kan-ka (Santali). kaṇḍ is pot; kan-ka in Sanskrit is karnṇaka 'ear or rim of jar'. kaṇḍ also means 'fire-altar'.





kanka = rim of pot (Santali)

kan:ka = a metal (Pali); **kan-** = copper (Ta.) **kanaka** = gold; kanaka_dhyaks.a = superintendent of gold, treasurer (Skt.) **kaṉṉār,** blacksmiths, coppersmiths (Ta.)



kan. ḍa = a pot of certain shape and size (Santali) Rebus: **kaṇḍ** = altar, furnace (Santali) **khaṇḍa** = instrument, implement, weapon; khaṇḍa puruskedae, he stretched his arm grasping the sword as high as he could; **khaṇḍa bhaṇḍa** = implements of all kinds, arms of all sorts (Santali.lex.)

Fig. Daimabad seal showing rim of jar. This is glyph Sign No. 342 (Mahadevan corpus) -- the most frequently occurring

glyph in the entire corpus of Sarasvati hieroglyphs.

The most freuqently occurring glyph among Sarasvati hieroglyphs is kan.d. kan-ka 'rim of jar' (the emphasis is on the rim). This denotes rebus: the fire-altar of a miner, mine-worker (khanaka). This becomes the only glyph on a Daimabad seal dated circa 14th century BCE.

> The next most freuquently-occurring glyph is the **one-horned heifer** (seen on 1159 epigraphs). The identifying feature of this glyph is the pannier which adorns it. See m1656 On this petoral, the pannier is vividly displayed. The orthographic accent is on the waist-zone, the pannier. This is an orthographic feature unique to the one-horned heifer. It is a phonetic rebus determinative of the artisan's workhop: kammarsāla 'pannier' (Telugu); rebus: karmāraśāla 'workshop of smith' (Skt.)

karmā**ra**ś**ā**l**a** = workshop of blacksmith (Skt.) **kamar** a semi-hinduised caste of blacksmiths; **kamari** the work of a blacksmith, the money paid for blacksmith work; **nunak ato reak in kamarieda** I do the blacksmith work for so many villages (Santali) **k**ā**rm**ā**ra** = metalsmith who makes arrows etc. of metal (RV. 9.112.2: **jarat**ī**bhih o**ṣ**adh**ī**bhih par**ṇ**ebhih** ś**akun**ā**n**ā**m k**ā**rm**ā**ro a**ś**mabhih dyubhih hiran.yavantam icchat**ī) kammara, kammāra, kammagā ra, **karm ra, karmak**ā **ra, kammag**ā **ra, kamb**ā **ra** = one who does any business; an artisan, a mechanic; a blacksmith (Ka.) **kamm**ā**ḷa** = an artisan, an artificer: a blacksmith, a goldsmith (Ta.Ka.); a goldsmith (Ka.) kammara = the blacksmith or ironsmith caste; kammaramu = the blacksmith's work, working in iron, smithery; kammaravāḍu, kammari, kammarīḍu = a blacksmith, ironsmith; kammarikamu = a collective name for the people of the kamma caste (Te.) **kamm**ā**ra**ś**ā**l**a** = workshop of blacksmith (Skt.) **kamm**ā**r-as**ā**le** = the workshop of a blacksmith (Ka.); **kamasa**ā**av**ā**ḍu** = a blacksmith (Te.) **kamars**ā**r**ī smithy (Mth.) kambār-ike, kammār-ike = a blacksmith's business (Ka.Ma.)(Ka.lex.)(DEDR 1236). karmakāra = labourer (Pāṇini's Aṣṭādhyāyi: kārukarma = artisan's work (Arthaśāstra: 2.14.17); karmānta = a workshop or factory (Arthaśāstra: 2.12.18, 23 and 27, 2.17.17, 2.19.1, 2.23.10). **kamaru** to be singed, burnt or scorched (by the sun, by fire)(Ka.); kamaru, kamuru, kamalu (Te.); kamarike, kamarige = the state of being singed etc.; kamaru, kanaru, kamara, kamuṭu, kavuṭu, kavuru, gavulu = id. (Ka.) (Ka.lex.) **kamar** = a blacksmith; rana kamar, the ordinary blacksmith in the country (rana is their caste or tribal name); saloi kamar, a kind of blacksmith. Kamar kami mit bar hor.ko cet akata = a few Santals have learnt blacksmith work (Santali. Bodding). Kambru = a blacksmith; ale t.hen bar oṛak kambru menakkoa = two families of blacksmiths live with us; kambru ṭhene sen akana = he has gone to the blacksmith (Santali.Bodding). **karuman-, karumakan-** blacksmith (Ta.lex.) **kammam** = kammiyar toṟil (i.e. work of kammiyar or kammāḷar: kan-n-ār, kollar, cir-par, taccar, taṭṭār); kammiyanūl = cir-panūl, i.e. book of sculpture (Ta.lex.) **kammara** = the blacksmith or ironsmith caste; kammaramu = the blacksmith's work, working in iron, smithery; kammarava_d.u, kammari, kammarīḍu = a blacksmith, ironsmith (Te.lex.) kammar-a,

kammagār-a = blacksmith (Ka.lex.); kammāḷa = an artisan, an artificer; a blacksmith, a goldsmith (Ka.Ta.Ma.); a goldsmith (Ka.lex.) **kammara** = the blacksmith or ironsmith caste; kammaramu = the blacksmith's work, working in iron, smithery; kammarava_d.u, kammari, kammari_d.u = a blacksmith, ironsmith (Te.lex.) **kambār-a** = blacksmith; kambār-ike, kammār-ike = a blacksmith's business (Ka.lex.) kamār (Or. kamhār, toil) syn. of **baṛae**, blacksmith. This term seems to be applied especially to the blacksmiths of Gangpur, who, though of Munḍari race like the lohars of Biru, Barway and other Oraon parts, are considered outcasts by the latter because they use tanned hides for their bellows. (Mundari.lex.) kambru = a blacksmith. Ale t.hen bar or.ak kambru menakkoa = two families of blacksmiths live with us; kambru t.hene sen akana = he has gone to the blacksmith (Santali.lex.Bodding) **kambru guru** = the reputed original teacher of the ojhas, a mythical teacher of charms and incantations, as also of medicine. Acc. to one form of the Santal traditions the person who taught the women witchcraft was Kambru; acc. To another, it was Maran buru. It is not possible to decide whether there has been an old sage of this name; or whether it should be understood as a person from Kamrup; the Santal traditions may be understood both ways (Santali.lex.Bodding). kamar = a blacksmith, a semi-hinduized caste; kolhe kamar, a Kolhe blacksmith and iron-smelter; lohar kamar, a caste of blacksmiths that live more in conformity with Hindu caste rules (do not eat meat, do not drink beer; rare in the Santal country); rana kamar, the ordinary blacksmiths in the country (rana is their caste or tribal name); saloi kamar, a kind of blacksmith. Kamar kami mit bar hoṛko cet akata = a few Santals have learnt blacksmith work. The rule among the Santals is that a village (or several villages) keep a blacksmith who does all repairs to agricultural implements free of charge, but receives twenty seers of paddy and one winnowing-fan full of Indian corn cobs and two sheaves of pady for each plough; to make a ploughshare he is paid for the iron; to put teeth on a sickle he gets two seers of paddy, and he is also paid half a seer of rice from each house at the Sohrae. He is paid for whatever else he makes new; kara era, the wife of a blacksmith (Desi kamar; H. karmkār; B. kāmār); kamari = the work of a blacksmith, pay for such work (Santali.lex.) karmāruḍu a blacksmith, an artisan (Te.lex.) kamarsārī smithy (Mth.); kamarsaāyar (Bi.)(CDIAL 2899). 2104.<u>Workshop</u>: **kamhala** workshop (Si.); kammala smithy (Si.); kammasālā (Pkt.); karmaśā lā workshop (MBh.)(CDIAL 2896). cf. karuman-, karumakan- blacksmith (Ta.lex.) karuman- blacksmith (Ta.); karu-makan- id. (Kamparā. Pampā .37)(Ta.lex.) **karm**ā **ra** blacksmith (RV.); **kamm**ā **ra** worker in metal (Pali); kammāra, kammāraya blacksmith (Pkt.); kamā r (A.); kā mār (B.); kamāra blacksmith, caste of non-Aryans, caste of fishermen (Or.); kamā r blacksmith (Mth.); kaṁburā (Si.)(CDIAL 2898). **karmakŕ̥t—** 'performing work, skilful in work' AV., 'one who has done any work' Pāṇ., m. 'workman' Rājat. [kárman—1, kr̥t—] Si. *kam̆buḷa* 'doing menial work' or pp. of *kam̆bura- navā* (CDIAL 2891). **karmakāra—** 'doing work without wages' Kāś. on Pāṇ., *°aka*— m. 'one who does any work'. 2. **karmakā- rin—** 'doing any work'. [Cf. karmakara—. — kárman—1, kāra—1] 1. Pa. *kammakāra*—, *°raka*— m. 'hired labourer, work- man', *°rī*— f.; Pk. *kammagāra*— m. 'servant', *kammāriyā*- f. 'female servant or slave'; Sv. *kāmar* 'slave' (← Ind.?); L. *kamārā* m. 'servant'; Ku. N. *kamāro* m., *°ri* f. 'slave'. 2. OM. *kāmārī* m. 'servant'. (CDIAL 2888).

karmakara— m. 'workman, hired labourer' MBh. [Cf. karmakāra— from which it cannot in all cases be distinguished: kárman—1, kará—1] Pa. *kammakara*— m., °*rī*— f.; Pk. *kammayara*— m. 'servant'; H. *kamerā* m. 'hired labourer'; Si. *kam̆bura- navā* 'to serve as a menial or slave'. (CDIAL 2887). karmaka_ra_payati causes to work as a servant (Skt.); kama_ra_in.u to cause to work (S.)(CDIAL 2889). **kārmá—** 'active, laborious' Pāṇ. [kárman—1] Pk. *kamma*— 'connected with work'; K. rām. *kāmu* 'slave', ḍoḍ. *kāmō*; P. *kāmmā̃, kāmā* m. 'farm servant'; WPah. paṅ. cur. *kāmā* m. 'servant', bhal. *kāmo* m. (CDIAL 3074). **kārmika—** 'engaged in action, name of a partic. Buddhist sect', n. 'any variegated texture' Yājñ. [kárman—1] S. *kāmī* m. 'public officer'; WPah. bhad. *kāmī* m. 'servant'. (CDIAL 3076). **kárman—** 1 n. 'act, work' RV. [√kr̥ 1] Pa. *kamma* nom. sg. n., Aś. shah. *kramam,* man. *kramane* dat., kāl. dh. jau. gir. *kaṁma*—, NiDoc. *kamā*, Pk. *kamman*—, °*ma*— n., °*mā*— f.; Gy. pal. *kam* 'work, esp. smith's work', arm. *kam* 'work, thing, booty'; Ash. *kŕem, käm, klƏm*, Niṅg. *ṣlam*, Kaṭ. *kam*, Dm. Tir. *kram*, Paš. lauṛ. *lām* m., uzb. *ṣam*, gul. *kuṛúm*, nir. lagh. l *ām*, ar. *plōm*, Shum. l *am̃*, Gaw. l *am*, Woṭ. *kam*, Kal. *krum*, Kho. *korum* (obl. *kormo*), Bshk. l *ām*, Mai. Tor. *kām*, Sv. *kƏram*, Phal. *kram*, Sh. gil. *krom̥* m. (→ Ḍ. *krom* m.), koh. *kom*, pales. *kōm*, K. *kam* m., *kömü* f., S. *kamu* m., L. P. *kamm* m., WPah. bhad. *kamm* n., Ku. N. A. B. *kām*, Or. *kāma*, Mth. Bhoj. *kām*, Aw. lakh. *kāmu* , H. Marw. *kām* m.; G. *kām* n. 'work', *kāmũ* n. 'an office, administration'; M. *kām* n., Ko. *kāma* n., Si. *kama*. (CDIAL 2892). **śramaṇá—** m. 'ascetic, religious mendicant' ŚBr., °*ṇā*—, °*ṇī*— f. R. [√śram] Pa. Pk. *samaṇa*— m. 'ascetic', °*ṇī*— f., Aś.shah. man. *śramaṇa*—, gir. dh. kāl. *samaṇa*—, NiDoc. *ṣamana*, Dhp. KharI. *śramaṇa*—, *ṣamaṇa*—, OSi. *hamaṇa*, Si. *mahaṇā*, *māṇa* m., *meheṇa* (CDIAL 12683). **śrāmyati** 'is tired' RV. [√śram] Pa. *sammati* 'is weary', Pk. *sammaï*; Ḍ. *š* *l *mūna* 'to become tired', Sh.gil. *ṣomóĭki̯*, koh. *ṣomōnu̯*, gur. *ṣamōnu̯* (CDIAL 12693). **śrāntá—** 'wearied' RV. [√śram] Pa. *santa*— 'tired', Pk. *saṁta*—; WPah. (Joshi) *śāndṇu* intr. 'to tire'. — Or (like Sh.pales. *šodu*) < śāntá—. Addenda: **śrāntá—:** WPah.kc. *śandiṇo* 'to be (get) tired', kṭg. *śándhṇõ;*, J. *śāndṇu*.(CDIAL 12692). Labourer: **karmiṣṭha—** 'very active' lex. [karmín—] M. *kāmaṭh*, °*mīṭ* 'busy, diligent'.(CDIAL 2901). ***karmakāṣṭhikā—** 'using a stick to make work'. [kárman—1, kāṣṭhá—] P. *kamāṭhī, kameṭhī* f. 'beating'?(CDIAL 2890). kāmāṭṭi labourer, one who works with a hoe, digger of earth (Ta.Ma.); kāmāṭ i (Te.Ka.); kāmāt.e (Tu.); kāmṭhi (M.)(Ta.lex.) ***karmayati** 'works'. [kárman—1] Pk. *kammaï* 'does barber's work' (cf. B. *kamānā* s.v. *karmāpayati); Sh. *kramóĭki̯* 'to use, employ, spend' (→ Ḍ. *kr* *l *m*— 'to work')(CDIAL 2894) ***karmāpayati** 'works, earns'. [kárman—1] NiDoc. *kamāveti* 'causes to work, works'; Pk. *kammāvēi* 'earns, works'; K. *kamawun* 'to work, earn, smelt (metal)'; S. *kamāiṇu* 'to work, earn, slaughter'; L. *kamāvaṇ* 'to work, earn', P. *kamāuṇā*, WPah. cam. *kumāṇā*, khaś. bhal. *kamāṇū*; Ku. *kamūṇo* 'to work, cultivate', N. *kamāunu*; B. *kāmāna* 'to earn, shave'; Or. *kamāibā* 'to work, earn'; Mth. *kamāeb* 'to serve, weed (a field)'; OAw. *kamāvaï* 'earns', H. *kamānā*; G. *kamāvvũ* 'to help to earn', °*māvũ* 'to earn', M. *kamaviṇẽ*. Addenda: ***karmāpayati:** S.kcch. *kamāyṇū* 'to earn', WPah.kṭg. *kƏmauṇõ* (CDIAL 2893). **karmīṇa—** 'competent' in *anuṣṭúp—karmīṇa*— 'being per- formed with an a° verse' ŚBr., *alam—k*° 'competent for any work' Pāṇ. [kárman—1] Sh. (Lor.) *krāmīn* 'low—caste labourer such as a Ḍom'; WPah. bhal. *kamīṇ* m.f. 'labourer (man or woman)'; MB. *kāmiṇā* 'labourer' (CDIAL 2902). **karmín—**, *kármika*— 'active' ĀśvŚr.

[kárman—1] Pa. —*kammin*— 'doing', *kammika*— m. 'overseer'; Pk. *kammi*—, °*mia*— 'industrious', m. 'evildoer'; Pr. *īyƏmá* 'blacksmith', (LSI) *īma* 'slave'; S. *kamī* m. 'labourer'; L. P. *kammī* m. 'village labourer, menial'; N. *kāmi* 'blacksmith'; Or. *kāmī* 'day labourer', *kāmiā* 'servant who works in repayment of interest on money borrowed by his master'; Bi. *kamiyā̃* 'agricultural labourer who works on advances'; H. *kāmī* 'industrious', *kamiyā* m. 'labourer'; M. *kāmī* 'industrious'; OSi. *kämi* 'artificer', Si. *kämiyā* 'worker'; — Or. *kāmiṇi* 'female labourer' < **karmiṇikā*—. — Ext. with —*la*—: K. *kamyulu* m. 'farm labourer who lives in'; N. *kamilo* 'ant'; A. *kamilā* 'useful'. karmiṣṭha—, karmīṇa—; *gharakarmin—. Addenda: **karmín—:** Garh. *kāmī* 'slave'(CDIAL 2900). **kāmāṭī** a caste of Hindus who are generally labourers and palanquin bearers (G.); komat.ī (M.)(G.lex.) kāmāt.a = labour or work (for wages)(Ka.); kāmāṭi, kāmāṭa = a day-labourer (Ka.M.Te.Ma.Ta.); a house-servant (M.)

kamarasāla = waist-zone, waist-band, belt (Te.) kammaru = the loins, the waist (Ka.Te.M.); kamara (H.); kammarubanda = a leather waist band, belt (Ka.H.) **kammaru** = a waistband, belt (Te.) kammarincu = to cover (Te.) kamari = a woman's girdle (Te.) komor = the loins; komor kaṭhi = an ornament made of shells, resembling the tail of a tortoise, tied round the waist and sticking out behind worn by men sometimes when dancing (Santali) kambra = a blanket (Santali) [Note the pannier tied as a waist band to the one-horned heifer.][Bartleby.com notes that the English word 'shawl' meaning 'a square or oblong piece of cloth worn as a covering for the head, neck, and shoulders' has th eymology: Persian *shāl*, ultimately from Sanskrit śāṭī, cloth, sari. Hence, kamarsāla in Telugu to refer to the pannier taken through the kamar 'loins'.]

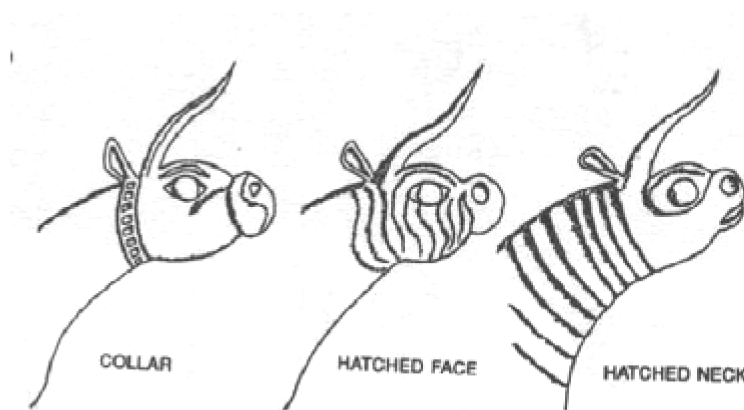
damṛa m. a steer; a heifer; damkom = a bull calf (Santali)

Rebus: **damṛi** = copper; **tamb(r)a** = copper (Skt.); **tamba** = copper (Santali) *damr.i, dambṛi, dam* b *i* 'one-eighth of a pice (copper)'; dammid.i id. (Telugu) **damr.i, dambr.i** one eighth of a pice (Santali) **damḍi_, damḍo** lowest copper coin (G.) **tāmbaḍa** copper plate; **tāmbaḍī, tāmbaḍo** a copper pot; **tāmbum** copper (G.)

The imagery on the pectoral m1656 shows overflowing (liquid) from the rim of the jar. The words which evoke this imagery are: er-e = to pour any liquids; to pour (Ka.); ir-u (Ta.Ma.); ira- i_i (Ta.); er-e = to cast, as metal; to overflow, to cover with water, to bathe (Ka.); er-e, ele = pouring; fitness for being poured(Ka.lex.) erako molten cast (Tu.lex.)

Rebus: eraka, er-aka = any metal infusion (Ka.Tu.); urukku (Ta.); urukka melting; urukku what is melted; fused metal (Ma.); urukku (Ta.Ma.); eragu = to melt; molten state, fusion; erakaddu = any cast thng; **erake hoyi** = to pour meltted metal into a mould, to cast (Ka.)

The owner of the pectoral is a coppersmith with a workshop and professional in working with metal infusion or fused metal or cast metal.



Rings on neck of one-horned heifer. One horn is kod. Rings on neck are: kot.iyum.

Rebus: koṭ 'artisan's workshop'.(Kuwi)

kūṭ a 'horn'; rebus: kūṭam 'workshop' (Ta.) kūṭam is also connoted by a glyph: a 'summit of a mountain'.

k**oṭ**.iyum [*k*oṭ*., ko*ṭ ī neck] a wooden circle put round the neck of an animal (G.) [cf. the orthography of rings on the neck of one-horned young bull]. **k**ōḍ**iya, k**ōḍ**e** = young bull; kō ḍelu = plump young bull; kōḍe = a. male as in: kōḍe dūḍa = bull calf; young, youthful (Te.lex.) kōḍ*iya,* kōḍ*e* young bull; adj. male (e.g., kōḍ*e* dūḍa bull calf), young, youthful; kōḍe *k*ā ~ḍ*u* a young man (Te.); kōḍē bull (Kol.); khoṛe male calf (Nk.); kōḍ*i* cow; *k*ōṛ*e* young bullock (Kond.a); kōḍ*i* cow (Pe.); *k*ūḍ*i* id. (Mand.); kōḍ*i* id., ox (Kui); *kōdi* cow (Kuwi); *kajja*kōḍ*i* bull; kōḍ*i* cow (Kuwi)(DEDR 2199). *ko*ṛ*a* a boy, a young man (Santali) *gōnde* bull, ox (Ka.); *gōda* ox (Te.); *kond*ā bull (Kol.); *kōnda* bullock (Kol.Nk.); bison (Pa.); *kōnde* cow (Ga.); *kōnd*ē bullock (Ga.); *kōnd*ā *, kōnda* bullock, ox (Go.)(DEDR 2216).

ācāri koṭṭya **=** forge, kammārasāle (Tu.) koḍ= place where artisans work (G.) koṭḍī a room (G.)

koḍ = place where artisans work (G.lex.) **ko**ḍ = a cow-pen; a cattlepen; a byre (G.lex.) goṛa = a cow-shed; a cattleshed; goṛa orak = byre (Santali.lex.) goṭho [Skt. koṣṭ ha the inner part] a warehouse; an earthen vessel in wich indigo is stored (G.lex.) koṭṭamu = a stable (Te.lex.)

koḍ = artisan’s workshop (Kuwi)

Ta.* kōṭu (*in pds.* kōṭṭu-)** horn, tusk, branch of tree, cluster, bunch, coil of hair, line, diagram, bank of stream or pool; **kuvaṭu** branch of a tree; **kōṭṭāṉ, kōṭṭuvāṉ** rock horned-owl (cf. 1657 Ta. **kuṭiñai).** ***Ko.* kṛ (*obl.* kṭ-)** horns (one horn is **kob**), half of hair on each side of parting, side in game, log, section of bamboo used as fuel, line marked out. ***To.* kwṛ (*obl.* kwṭ-)** horn, branch, path across stream in thicket. ***Ka.* kōḍu** horn, tusk, branch of a tree; **kōṛ** horn. ***Tu.* kōḍů, kōḍu** horn. ***Te.* kōḍu** rivulet, branch of a river. ***Pa.* kōḍ (*pl.* kōḍul)** horn. ***Ga. (Oll.) **kōr (*pl.* kōrgul)** id. ***Go.*** (Tr.) **kōr (*obl.* kōt-, *pl.* kōhk)** horn of cattle or wild animals, branch of a tree; (W. Ph. A. Ch.) **kōr (*pl.* kōhk)**, (S.) **kōr**

(*pl.* **kōhku)**, (Ma.) **kōr̥u (*pl.* kōẖku)** horn; (M.) **kohk** branch (***Voc.*** 980); (LuS.) **kogoo** a horn. ***Kui*** **kōju (*pl.* kōska)** horn, antler.(DEDR 2200). Tailless he-buffalo; ox with blunt horns: (DEDR 1914). 1787.Image: horn: kūṭa any prominence: a horn (Ka.); kōḍu, kōr̤ a horn of animals; a tusk (Ka.)(Ka.lex.) kōr̤, kōḍu a horn; kōr̤ke, kōr̤kiḷ, kōr̤kiḷim, kōr̤ge id. (Ka.); kōḍu kut.t.u to strike or gore with the horn or with the tusk (Ka.); kōḍu a horn of animals; a tusk (Ka.); kōḍu-vīsa the allowance of a vis of corn etc. for every bullock-load that comes into town etc.; kuḍu the state of being crooked, bent (Ka.); koḍu (Ma.)(Ka.lex.) **kūṭa a** horn, bone of the forehead, prominence (Vedic); prominence, top (Pali.lex.) **kūṭa** a horn; an ox whose horns are broken; kūṇikā the horn of any animal (Skt.lex.) sin:ghin horn projecting in front (Santali.lex.) **kūṭa** bone of the forehead with its projections, the crown of the head; end, corner (Skt.lex.)

kūṭa = horn (RV 10.102.4; AV 8.8.16; AitBr. 6.24; S'Br. 3.8.1.15; JBr.1.49.9; 50.1 (JAOS, 19, 114).

The glyph 'horns' also represents 'hammer' and suffixed to āra- the metal, ā*ra* **kūṭa** 'brass':

kūṭamu = the summit of a mountain (Te.lex.)

kollan-ulai-k- **kūṭam** blacksmith's workshop, smithy (Ta.lex.) kol-l-ulai blacksmith's forge (kollulaik **kūṭa**ttiṉāl : Kumara. Pira. Nītiner-i. 14)(Ta.lex.) **kampaṭṭa-k- kūṭam** mint (Ta.)

kūṭamu = summit of a mountain (Te.lex.) Rebus: **kūṭakamu** = mixture (Te.lex.) **kūṭam** = workshop (Ta.)

ārа**kūṭa** = brass (Skt.) āra**kūṭa** = arsenical copper [Arthas'a_stra].

ārabrass (Ka.) **kūṭakamu** = mixture (Te.lex.)

[āra= suffix to denote one who makes things: kammāra, uppāra = smith, salt-maker (Ka.); ār-r-u = to do, make (Ta.); āre, ārekār-a, āreya = a Mahratta man (Ka.Te.)]

kūṭam = a room (Ta.lex.)

kūṭa4 n. ' **summit**, peak ' MBh.
Pa. *kūṭa* -- n. ' summit ', *kūḍa* -- n.; Si. *kuḷa* ' mountaintop '; -- H. *kūṛī* f. ' iron helmet '(CDIAL 3395) Pali. Kūṭa2 (m. nt.) [Vedic kūṭa horn, bone of the forehead, prominence, point, ***qele** to jut forth, be prominent; cp. Lat. celsus, collis, columen; Gr. kolwno/s kolofw/n; Ags. holm, E. hill] -- (a) prominence, top (cp. koṭi), in abbha˚ ridge of the cloud Vv i.1 (=sikhara); aŋsa˚ shoulder, clavicle, VvA 121, 123 pabbata˚ mountain peak Vin ii.193; J i.73. Cp. koṭa. -- (b) the top of a house, roof, pinnacle A i.261; Vv 784

(=kaṇṇikā VvA 304); gaha˚ Dh 154; PvA 55. Cp. also kūṭāgāra. -- (c) a heap, an accumulation, in sankāra˚ dust -- heap M ii.7; PvA 144. -- (d) the topmost point, in phrase desanāya kūṭaŋ gahetvā or desanā kūtaŋ gaṇhanto "leading up to the climax of the instruction" J i.275, 393, 401; v.151; vi.478; VvA 243. Cp. arahattena kūṭaŋ gaṇhanto J i.114; arahattaphalena k. gaṇhiŋ ThA 99. kuṭṭhāgāra; PvA 282 (˚dhaja with a flag on the **summit);** DhA iv.186. In cpds.: -- ˚ *matta* as big as an upper chamber J i.273; Miln 67; -- ˚*sālā* a pavilion (see description of Maṇḍalamāḷa at DA i.43) Vin iii.15, 68, 87; iv.75; D i.150; S ii.103=v.218; iv.186. **-- (n)gama** going towards the point (of the roof), converging to the summit S ii.263= iii.156=v.43; **-- ṭṭha** standing erect, straight, immovable, in phrase vañjha k˚ esikaṭṭhāyin D i.14=56= S iii.211=M i.517 (expl. DA i.105 by pabbatakūṭaŋ viya ṭhita)

kōṭu **summit** of a hill, peak, mountain; **kōṭai** mountain; **kōṭar** peak, summit of a tower; **kuvaṭu** mountain, hill, peak; **kuṭumi** summit of a mountain, top of a building, crown of the head, bird's crest, tuft of hair (esp. of men), crown, projecting corners on which a door swings. ***Ma.*** **koṭi** top, extremity, flag, banner, sprout; **kōṭu** end; **kuvaṭu** hill, mountain-top; ***Ka.*** **kuḍi** pointed end, point, extreme tip of a creeper, sprout, end, top, flag, banner; **guḍi** point, flag, banner; **kuḍilu** sprout, shoot; **kōḍu** a point, the peak or top of a hill; **koḍirè** the top-leaf; **koṭṭu** cock's comb, peacock's tuft. ***Te.*** **koḍi** tip, top, end or point of a flame; **koṭṭa-kona** the very end or extremity. ***Kol.*** (Kin.) **koṛi** point(DEDR 2049) cf. Sumerian kur 'mountain' hurru (CAD) = mined *copper* (*Akkadian*) urru, uru = heap, *mountain* (*Akkadian*/Assyrian)

Vikalpa: Marathi. डांग [ḍāṅga] *m n* (H Peak or summit of a hill.) A name for the wild, hilly, and ascending tract along the range (esp. of the upper or eastern side) of the Sayhádri gháṭs in the North Desh. डांग is, in the northern division of the Sayhádri range (about Náshik &c.), what मावळ is in the southern (about Satárá &c.) Rebus: ḍāṅgar 'blacksmith' (H.); Nepali. डाङ्रे ḍāṅre , or *ḍā̃gre*, adj. Large; lazy; working with- out thoroughness or seriousness; -- s. A partic. kind of bird, the mainā; -- a contemptuous term for a **blacksmith** डाङ्रो ḍāṅro , or *ḍā̃gro*, s. A term of contempt used for a blacksmith (*kāmi*). [v.s.v. *ḍāṅre*.]

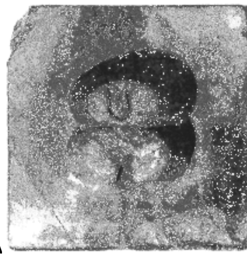
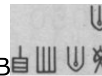
Southworth cites from Kuiper the following examples of glosses, testifying to a 'strong foreign impact': kūṭa, 'house'; *kuṇḍa*, 'pot, vessel'; ū*rdara*, 'a measure for holding grain'; *apūpa*, 'cake'; *odana*, 'rice dish'; *karambha*, 'a kind of gruel'; *piṇḍa*, 'a lump of flesh'; *ulūkhala*, 'mortar'; *kārotara*, 'sieve, drainer'; *camriṣ,* 'ladle'; *kos'a*, 'cask, bucket'; *k ṛśana*, 'pearl'; *kīnśa, kīā_ra*, 'ploughman'; *khilya*, 'waste piece of land'; *lān:gala*, 'plough'; *sīra*, 'plough'; *phā la*, 'ploughshare'; *tilvila*, 'fertile, rich'; *bīja*, 'seed'; *pippala*, 'berry of the ficus religiosa'; *mūla*, 'root'; *khala*, 'threshing floor'; *ṛbīsa*, 'volcanic cleft'; *kevaṭa*, 'cave, pit'; *kṛpīṭa*, 'thick or firewood'; *śakaṭi_,* 'cart'; āṇ*i*, 'linch-pin'; *vāṇi*, 'swingle tree'; *kulis'a*, 'axe'; kūṭa, 'mallet'.(cf. Southworth, F.C., 1979, Lexical evidence for early contacts between Indo-Aryan and Dravidian, in: M.M. Deshpande and P.E. Hook, eds., *Aryan and Non-Aryan in India*, Ann arbor, pp.191-233).

kūṭa, 'chief' **kūṭa** a house, dwelling (Skt.lex.) kaut.a living in one's own house, hence, independent, free; kauṭika-takṣa (opp. to gra_ma-taks.a) an independent carpenter, one who works at home on his own account and not for the village (Skt.lex.) gra_ma-**kūṭa**= village chief (Skt.lex.) **kūṭud.u** = a stone cutter (Te.lex.)

Thus, the hieroglyph of a one-horned heifer, with a pannier, with rings on neck clearly connotes an artisan's workshop kod. -- in this case, the coppersmith's karmaarashaala. The artisan could also be a village chief '**kūṭa'**.

The other glyph which occurs as frequently as the one-horned heifer is the 'standard device' in front of the heifer. The standard device is also a hieroglyph, san:gaḍa 'lathe'; rebus: furnace. The word san:gaḍa can also be denoted by a glyph of combined animals. The bottom portion of the 'standard device' is sometimes depicted with 'dotted circles'. khangar ghongor 'full of holes'; (Santali) rebus: kangar 'portable furnace' (Kashmiri). This device also occurs by itself and as variants on 19 additional epigraphs, in one case held aloft like a banner in a procession which also includes the glyph of the one-horned heifer as one of the banners carried.

Orthography and rebus reading of Standard device (often shown in front of one-horned heifer on Sarasvati hieroglyph corpus)

 m1203A  m1203B1018 Note the gimlet precisely indicated on the standard device on m1203A, the sharp point is drilling into a disc-shaped bead].

san:ghāḍo**, saghaḍī (G.)** = firepan; **saghaḍī**, ś**aghaḍi** = a pot for holding fire (G.)[cula_ sagaḍī portable hearth (G.)] **agud.e** = brazier (Tu.)

san:gaḍa, 'lathe, portable furnace'; rebus: battle; jangad.iyo 'military guard who accompanies treasure into the treasury'; san:ghāḍiyo, a worker on a lathe (G.) The dotted circles on the bottom portion of the device connote ghangar ghongor; rebus: kangar 'portable furnace'.

Evidence for mleccha spoken in India, prior to 8th century BCE

If mlecchita vikalpa occurred in *Kāmaśāstra*, Mleccha could have been lingua franca prior to 8th century BCE, when Nandi transcribed the work (The work of Vatsyayana uses the term, *mlecchita vikalpa*, to denote cipher writing of mleccha, lingua franca).

An early version of *Kāmaśāstra* is pre-dates eighth century BCE. As Alain Danielou notes: "The predecessors of Vātsyāyana. The first formulation of the Kamashastra, or rules of love, is attributed to Nandi, Shiva's companion. During the eighth century BCE, Shvetaketu, son of Uddalaka, undertook the summary of Nandi's work.The date is known, since Uddalaki and Shvetaketu are the protagonists of the Brihat Aranyaka Upanishad and Chandogya Upanishad, which are usually dated to this period and contain important passages connected with erotic science. A man of letters called Babhru, together with his sons or disciples, known as the Babhravya, made an important written work, summarizing the too-vast work of Shvetaketu.

The Babhravya came originally from Panchala, a region located between the Ganges and the Yamuna, to the south of present-day Delhi, but most probably lived in the city of Pataliputra, the great center of the kingdom of Chandragupta, which resisted Alexander's invasion in the fourth century and became the seat of the Ashoka empire a century later…The text of Suvarnanabha must date from the first century BCE, since it mentions a king of Kuntala (to the south of Pataliputra), named Shatakarni Shatavahana who reigned at this time and who killed his wife accidentally in the course of sadistic practices. On the other hand, Yashodhara, at the beginning of his commentary, attributes the origin of erotic science to Mallanaga, the 'prophet of the Asuras' (the ancient gods), meaning to prehistoric times. Nandi, Shiva's companion, is then said to have transcribed it for manking today. The attribution of the first name Mallanaga to Vatsyayana is due to the confusion of his role as editor of the Kama Sutra with that of the mythical creator of erotic science." (Alain Danielou, 1994, *The complete Kama Sutra*, Park Street Press, Rochester, Vermont, pp.3-4).

Tamilla as a synonym of Milangka, Wilangka (Milakkha, mleccha, Pali)

"This is something about Pali on the northern Thai fringe, or about Sri Lanka in the Chiangmai valley: The term Lawa was used in reference to highland outsiders in Lanna and Shan States. Its longer form is Damilawa , and is said to derive from the Sanskrit Damila, the same term as informed the Buddhist Sri Lankan ethnic term Tamil for their non-Buddhist Others. The root of the term lay in Sinhalese chronicle accounts of the state and its dark-skinned enemies. Thus, along with the localization of Buddhism in mainland Southeast Asia came certain aspects of ethnic ranking and prejudice that contributed to rulers' ability to contextualize in universalistic terms their rule and the peoples that it excluded. Many Chiangmai chronicles used the term Tamilla for Lawa. Some used the term Milangka. Wilangka, a variant on that term, was used among Lawa in reference to their chief who lost out to the lowland forces. Milangka is derived from Milakkha, the Pali language equivalent to the Sankrit Mleccha ("savages")." **Leif Jonsson** // Oct 17, 2008
http://rspas.anu.edu.au/rmap/newmandala/2008/09/30/pali/#comment-568304

I am thankful to Prof. Shrinivas Tilak for the following explanations.

At one stage, mleccha referred to an alien or an outsider. According to the Bhavishya Purana, it was King Shalivahana who demarcated Sindhurashtra as the land and nation of the Aryas that lay east of the Sindhu River effectively separating it from the land of the mlecchas on the west of the Sindhu River (sthāpita tena maryāda mlecchāryānam prithak prithak. Sindhu sthānam iti jñeyam rāṣṭram āryasya ca uttamam. Mleccha sthānam param sindhoh kritam tena mahātmana (Pratisarga adhyaya 2).

Mimamsa, usually dismissed as the most orthodox school of Indian philosophy, nevertheless paid more attention to the mlecchas and unhesitantly lauded their accomplishments in secular matters than any other darshanas. For instance, commenting on Jaiminisūtra (1:3.10), śabara raised and discussed the problem whether the meaning of certain Vedic words like pica or nema (which were not common among the Aryas but well known among the mlechhas) should be derived from Sanskrit roots or from their actual usage among the mlechhas. He advocated the linguistic usages of the mlecchas in secular matters and encouraged their incorporation at the Prakrit (lokavani) level.

Kumarila (ca. 700), another great Mimasa philosopher, granted them a potentially superior competence in worldly and secular (laukika) matters. In his Tantravartttika he discusses the mlecchas at length and advises to engage with them in empirical transactions (drisharthavyavahara) and learn from them such secular professions and skills as agriculture, astrology, and drama. Acknowledging that the mlecchas were more qualified in fields like building houses, producing silk products, and making harnesses he credited them for providing appropriate terminology and words in these areas (I am wondering if Dr Kalyanraman's reference to and discussion of 'Mlecchita vikalpa' would be relevant here)? Kumarila also invited Indians to explore countries inhabited by the mlecchas (see Tantra Varttika # 150, 153

on Jaiminisutra 1:3.10).

Prabhakara, another leading exponent of the Mimamsa school, also rejected parochial attempts to (1) derive all mleccha words from Sanskrit roots and (2) construe their meanings `etymologically' regardless of their actual usage by the mlecchas (see Shabara and Kumarila on Jaiminisūtra 1:3.10)(also Wilhelm Halbfass 1990: 179). As a result, there has been a long tradition of Sanskrit scholars who were diglossic (i.e., bilingual = dvaibhashika)(see Wilhelm Halbfass, *India and Europe: An Essay in Philosophical Understanding*, Delhi: Motilal Banarasidass, 1990:185).

Such an early positive perception of the mlecchas however changed over the centuries. Some of the reasons may be found in Bodhayana's Dharmasutras where he defined the mleccha as one who eats beef, records his disagreement repeatedly [assertively?], and is devoid of righteous behaviour (Gomamsa khadako yastu, viruddham bahu bhashate, sarvacara vihinasya mleccha iti abhidhiyate).

Mlecchitavikalpa is a term which occurs in Vatsyayana's vidyāsamuddeśa (objectives of learning) śloka listing 64 arts: three of these arts related to language are: *d*e*ś*a **bh**āṣā *j*ñā*na; akṣara muṣṭika kathana; mlecchita vikalpa* [trans. learning dialects of the linguistic area (deśa); messaging through use of fingers and wrists; cryptography (writing system)].

Mlecchitavikalpa means: alternative representation of language through writing. Mlecchita means 'made by mleccha'. Mleccha means 'copper workers'.

Thus, mlecchitavikalpa relates to the writing system invented by early metal-workers, mleccha (meluhha) of the Sarasvati linguistic area.

Early references to mleccha (meluhha) do indicate it as a dialect and NOT as a term referring to speakers or groups of people. The distinction between arya vaacas and mleccha vaacas is only in reference to, respectively, the grammatical or non-grammatical forms of the lingua franca.

That a term should have been coined to represent the writing system of mleccha language is also significant. That it was called mlecchita vikalpa and that a study of this cryptography was a prescribed art by Vatsyayana should make us pause and rethink the early 'meaning' of mleccha. The famous Mesopotamian cylinder seal (showing the meluhhan merchant carrying the antelope (read: ranku, tin; ranku, antelope) also refers to meluhha as a language (requiring an interpreter).

Whenever the Indian tradition came across new ideas and practices, they naturally tested the hermeneutical ingenuity of its thinkers and commentators to address them according to the known rules preserved in the tradition of Mimamsa.

Vikalpa has been one favoured strategy wherein one is invited to choose from one or the other of the alternatives if they seem to have about the same power or authority. Thus, Arjuna is offered the option of selecting any one or more of the three types of yogas taught in the Gita.

Badha, however, is recommended in a situation where it can be demonstrated that one idea or practice is more authoritative than the other. In that event, the injunction, idea or practice with the lesser authority is annulled allowing the one having greater authority to stand.

Samuccaya is the third available strategy according to which all the items enjoined by [conflicting] injunctions, ideas or practices are considered equally valid or obligatory. Any apparent conflict is then resolved by adjudicating the implicated views or practices to different times, authorities, or ages. This strategy is discernible in the concept advocating the joint deployment of knowledge and action(jnanakarmasamuccaya).

See Jaiminisutra 12:3.9-17; P.V. Kane *History of Dharmashastra: Ancient & Medieval Religious*

& Civil Law 2:1326-30; Patrick Olivelle *The Ashrama System: The History and Hermeneutics of a Religious Institution*. New York: Oxford University Press, 1993.

The expression mlecchita vikalpa suggests that the tradition opted for the vilakpa option (rather than the badha or samuccaya) when evaluating or assessing the ideas or practices (whether as language,art or professions)described as Mleccha.

Reverting to an interpretation of mlecchita-vikalpa.

Clearly, mleccha-speakers had the competence to work with technologies, say, of agriculture or metals. Hence, the following lexemes:

mlecchita {mlis.t.a} from mlāna `faded, withered'; hence, mliṣṭa `spoken indistinctly' P Pāṇini. 7-2 , 18; mleccha `a person who lives by agriculture or by making weapons'

The compound mlecchita-vikalpa as one of the 64 arts is normally associated with representation of des'a bhaashaa in an alternative representation (vikalpa), say, a glyptic writing or pictorial writing system.

The triad of arts listed by Vatsyayana among the 64 arts are: *akṣara muṣṭika kathana*, *deśa bhāṣā jñāna*, *mlecchita vikalpa*. All three relate to social communication methods.

I suggest that mlecchita vikalpa was the ONLY writing system related to *deśa bhāṣā jñāna* -- that is expression of language through writing. And, the invention of this writing system complemented the invention of alloying metals and also complemented the method of communication called akshra mushtika kathana (story-telling using fingers and wrist, also called mudra?). If there were alternative writing systems, wouldn't Vatsyayana have mentioned it?

I agree about the samuccaya strategy of absorbing inventions. *Rasaratnasamuccaya* is the title of an early work in chemistry (alchemy).

It is not mere coincidence that most of the Sarasvati hieroglyphs find their expression on 5 or 6 devices on early punch-marked coins of janapada-s including yaudheya.

It appears, therefore, that vikalpa is in the context of an option, an alternative method of representing spoken language.

Three of the 64 arts listed by Vatsyayana are:

- The art of understanding writing in cipher and the writing of words in a peculiar way (mlecchita vikalpa)
- The art of communicating through fingers and knuckles/wrists (mudra) (*akṣara muṣṭika kathana*)
- Knowledge of language and of the vernacular dialects (*deśa bhāṣā vijñāna*)

The work discovers some lexemes of the Meluhha language and tags them to epigraphs of Indus script, containing hieroglphs. A few 'rosetta stones' validate the decipherment. Through the entire corpus of about 4,000 epigraphs is included the document, only one instance of a broken seal (chipped in a corner) is-used as reconstructed by Huntington. This is a seal which shows a face with tiger's mane ligatured to a person with a shoggy face, seated in a yogic posture and surrounded by a set of animals. Yes, there are many cracked pottery

which also contain epigraphs. Tigers's mane =cūḷa; rebus: furnace; person seated in penance =kamaḍha; rebus: kampaṭṭa 'mint'. Face =mukha; rebus: mu~ha 'ingot'.

sodo bodo, sodro bodro adj. adv. rough, hairy, hirsute, uneven, shaggy, (Santali) *Nk. (Ch.)* sodgare fireplace (DEDR 2857) sodagor = a merchant, trader (P.B.) cūla 'tiger's mane' (Pkt.)(CDIAL 4883) cūri = bangles (H.) cūlai furnace, kiln, funeral pile (Ta.)(CDIAL 4879; DEDR 2709)	sal 'Indian Gaur, *Bos Gaurus*' (Santali) *sal* 'open a smithy, work a smithy' (Santali) kūdī, kūṭī 'bunch of twigs' (Skt.lex.) kuthi 'furnace for smelting ore' (Santali)
kamadha, kamat.ha, kamadhaka, kamadhaga, kamadhaya = a type of penance (Pkt.lex.) kampat.t.tam coinage, coin (Ta.); kammat.t.am, kammit.t.am coinage, mint (Ma.); kammat.i a coiner (Ka.)(DEDR 1236) kuntam 'haystack' (Ta.)(DEDR 1724) kundamu = a pit for receiving and preserving consecrated fire (Te.) mēt.am = goat (Ta.) mēnte 'a couple' (Tu.) med 'iron' (Mundari) krammara 'look back' (Te.) kamar 'smith' (Santali) **M0304 seal with Sarasvati hieroglyphs.**	kat.ama_ bison (Ta.)(DEDR 1114). kadiyo [Hem. Des. kad.a-i-o = Skt. sthapati a mason] a bricklayer; a mason (G.) *badhia* 'castrated boar'; *bhator* 'boar'(Santali) badhi 'those who work both in iron and wood' (Santali) kolo, kolea_ jackal (Kon.lex.) kol = pan~calo_kam (five metals) (Ta.lex.) kol furnace, forge (Kuwi) [The jumping tiger: put.i, 'to jump'; put.a, 'calcining of metals'; thus rebus of glyph connotes, put.a: a furnace for calcining minerals] 1† ibha 'elephant' (Skt.) ib 'iron' (Ko.)(DEDR 486) **mēd** 'body' (Kur.)(DEDR 5099); med 'iron' (Ho.)

Text 2420
on m0304

med 'body'; rebus: med 'iron' (Ho.)

dato 'claws or pincers (chelae) of crabs'; **datom, ditom** to seize with the claws or pincers, as crabs, scorpions; datkop = to pinch, nip (only of crabs) (Santali) Rebus: dhatu 'mineral' (Santali)

sannī, sannhī = pincers, smith's vice (P.)

sal stake, spike, splinter, thorn, difficulty (H.); **sal** 'workshop' (Santali)

kanda kanka sal; rebus: workshop (**sal**) (with) fire-altar (of) khanaka, miner

ayo, hako 'fish'; **a~s** = scales of fish (Santali); rebus: aya = iron (G.); **ayah, ayas** = metal (Skt.)

kanda kanka; rebus: kanda khanaka 'fire-altar (of) miner'

1† 216† 229† 344 59† 342†

In the context of Iranica, there is an Akkadian cylinded seal which shows a Meluhhan merchant who required an interpreter. This indicates that Meluhhan was a non-Akkadian language. A substrate language has however been reconised from terms such as tibira 'merchant'; sanga 'priest'-- words which have cognates in Bharatiya languages.

Muhly, the archaeo-metallurgist scholar notes that Meluhha supplied tin to Mesopotamia. The general identification of Meluhhu as Baloch region is concordant with early Amri-Nal culture in the Makran coast (south of Karachi). A cognate term Meluhha is Mleccha which is mentioned in ancient text such as Manusmruti and Mahabharata. In the Mahabharata, a miner named Khanaka speaks Mleccha. In Manusmruti, languages are classified as Mleccha vācas and Arya vācas (that is, lingua franca and literary Sanskrit, respectively).

The objective of the work is to delineate the glosses of mleccha vaacas.

In addition to the Meluhhan shown on the Akkadian cylinder seal, there are three other objects with epigraphs: two tin ingots and one cylinder seal with pictographs. Rebus (Latin: 'by means of things') is a graphemic expression of the phonetic shape of a word or syllable.The two tin ingots contain glyphs which do not find any parallels in cretan but have concordant glyphs in Indus Script. These pictographic glyphs can be read rebus as related to tin (ran:ku; rebus: antelope). On one cylinder seal, a tabernae montana plant is depicted as identifies by Potts. That *tabaernae montana* is called tagaraka in many Bharatiya (Indic) languages; read rebus: tagara, 'tin'.

Two tin ingots with Sarasvati epigraphs

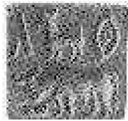
Two other rosetta stones are the two late bronze age tin ingots from the harbor of Haifa, Israel contain glyphs used in epigraphs of Sarasvati civilization!

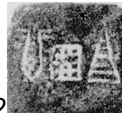
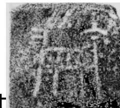


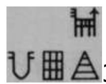
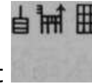
The picture of these two ingots was published by J.D. Muhly [New evidence for sources of and trade in bronze age tin, in: Alan D. Franklin, Jacqueline S. Olin, and Theodore A. Wertime, *The Search for Ancient Tin*, 1977, Seminar organized by Theodore A. Wertime and held at the Smithsonian Institution and the National Bureau of Standards, Washington, D.C., March 14-15, 1977]. Muhly notes:"A long-distance tin trade is not only feasible and possible, it was an absolute necessity. Sources of tin stone or cassiterite were few and far between, and a common source must have served many widely scattered matallurgical centers. This means that the tin would have been brought to a metallurgical center utilizing a nearby source of copper. That is, copper is likely to be a local product; the tin was almost always an import...The circumstances surrounding the discovery of these ingots are still rather confused, and our dating is based entirely upon the presence of engraves signs which seem to be in the Cypro-Minoan script, used on Cyprus and at Ugarit over the period 1500-1100 BCE. The ingots are made of a very pure tin, but what could they have to do with Cyprus? There is certainly no tin on Cyprus, so at best the ingots could have been transhipped from that island. How did they then find their way to Haifa? Are we dealing with a ship en route from Cyprus, perhaps to Egypt, which ran into trouble and sank off the coast of Haifa? If so, that certainly rules out Egypt as a source of tin. Ingots of tin are rare before Roman times and, in the eastern Mediterranean, unknown from any period. What the ingots do demonstrate is that metallic tin was in use during the Late Bronze Age...rather extensive use of metallic tin in the ancient eastern Mediterranean, which will probably come as a surprise to many people." (p.47)

We will demonstrate that the symbols incised on the ingots are not Cypro-Minoan symbols but Harappan pictographs.

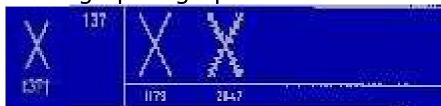
m-1336a 2515 (Mahadevan)

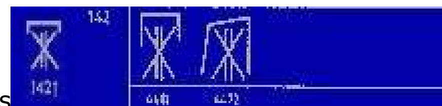

m-1097 (On this seal, the antelope appears in the middle of the inscription; it is apparently this pictograph that gets normalised as a 'sign', Sign 184 and variants].

m1341 2092m0516At

m0516Bt 3398 m0522At m0522Bt 3378

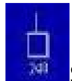
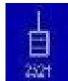
The sign pictographs are:

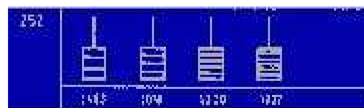


Sign 137 and variants


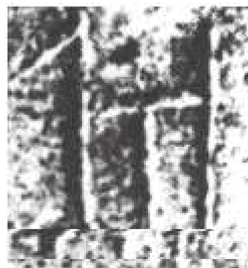
Sign 142 and variants

dā~ṭu = cross over; da.ṭ- (da.ṭṭ-) to cross (Kol.); dāṭisu – to cause to pass over (Ka.); da.ṭ- (da.ṭ-y-) to cross (mark, stream, mountain, road)(Ko.); tāṭṭuka to get over or through (Ma.); tāṇṭu = to cross, surpass (Ta.)(DEDR 3158).

Sign 249 



Sign 252 and variants





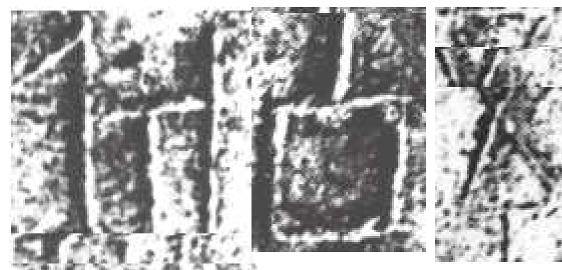
This pictograph clearly refers to an antelope as depicted on the Mohenjodaro copper plate inscription: (m-516b shown).

Sign 182 is a stylized glyph denoting a ram or antelope: **tagar** (Skt.); rebus: **takaram** 'tin' (Ta.)

On each ingot, there are two signs as shown below:

[Let us refer to these signs as, 'antelope' and X]

[Let us refer to these signs as, X and 'mould' or 'liquid measure'].



Liquid measure: **ran:ku**; rebus: **ran:ku** = tin; rebus**: ran:ku** = antelope. Thus both liquid measure glyph and antelope glyphs are graphonyms (graphically denoting the same rebus substantive: ran:ku, 'tin'. **X** glyph which is common to epigraphs on both the tin ingots may refer to an 'ingot' or a **dhātu** 'mineral'. Only a smith had the competence to inscribe on metal ingots and slso on bronze tools/weapons, apart from copper plates. Many epigraphs have been found on such objects. The language mleccha is a Bharatiya language. Over 2000 lexemes include homonyms depicting pictographic glyphs (such as rhino, elephant, tiger etc.) and also substantive repertoire related to a mine or a smithy: furnace types , minerals, metals, alloys.

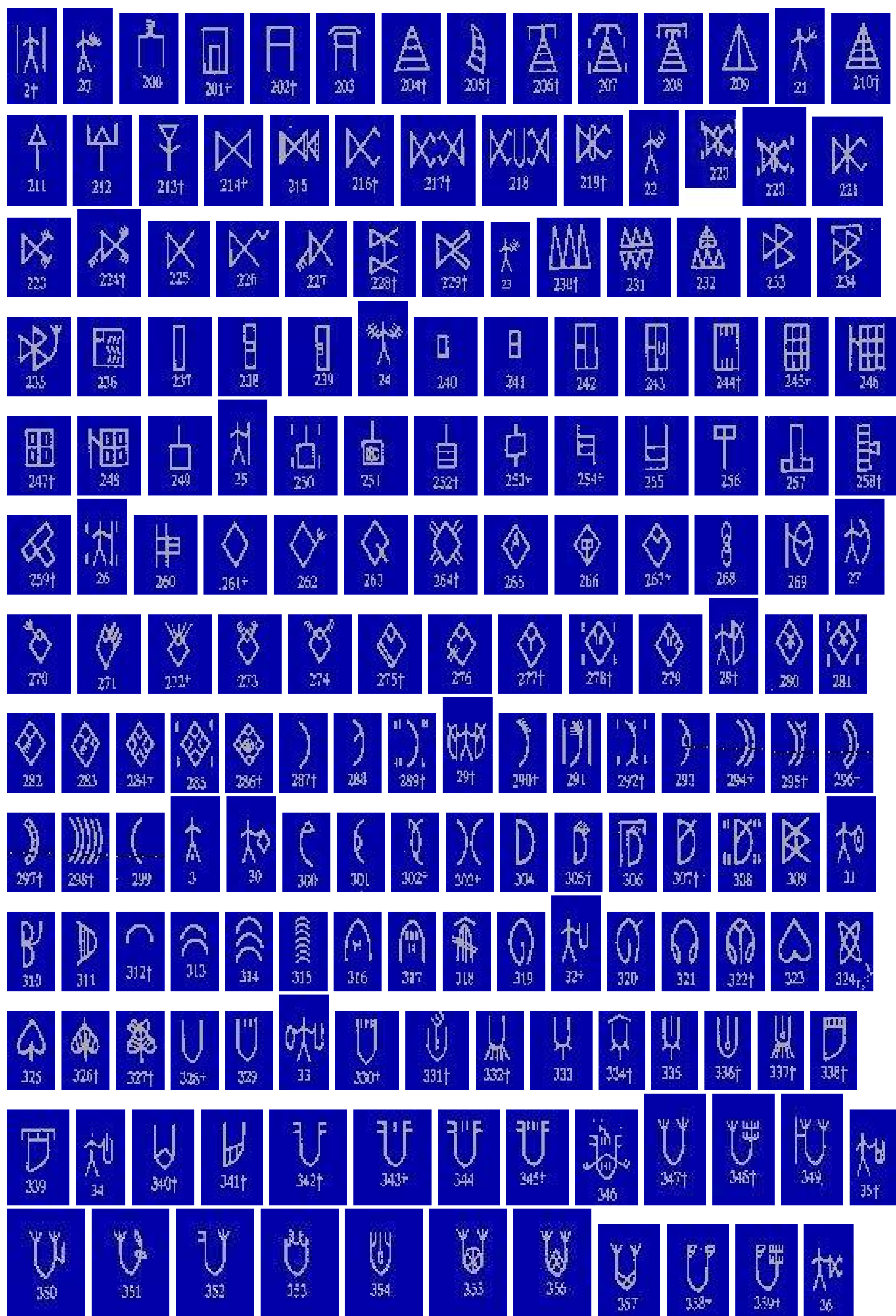
This identification of language lexemes and corresponding glyptic representation in pictographic writing is primised on the existqance of a linguistic area circa 2500 BCE. (A linguistic area is recognized as a region where languages absorb features from one another and make them their own). Thus, proto-versions of Tamil, Austtric, Munda, Prakrits, Sanskrit (and over 20 present-day languages in India) have hundreds of cognates, in particular, related to agriculturai terms and smithy terms and smithy terms, consistent with the maritime-riverine civilization along the Indian ocean Rim and with trade transactions with ANE. Muhly rightly notes the link between the emergence of the bronze age and the invention of a writing system. Rebus readings of almost all glyphs (pictorial motifs as well as signs) relate to mine workers' and metalsmiths' repertoire. http://sites.google.com/site/kalyan97

Two inventions had paralleled: invention of metal alloying, invention of a writing system. A tribute indeed to the competence of the ancient artisans, the pitṛ of present day Bhāratīya.

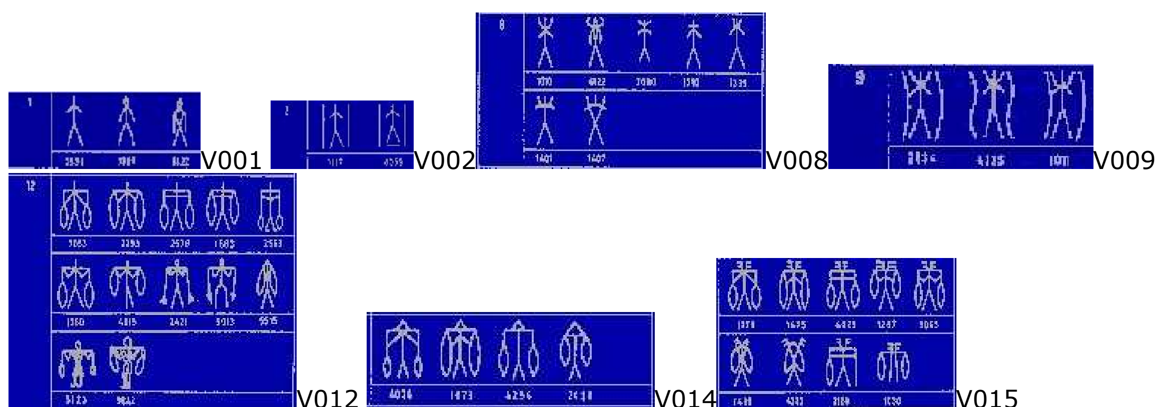
S. Kalyanaraman, Ph.D., Director, Sarasvati Research Centre. Kalyan97@gmail.com Jan. 2009

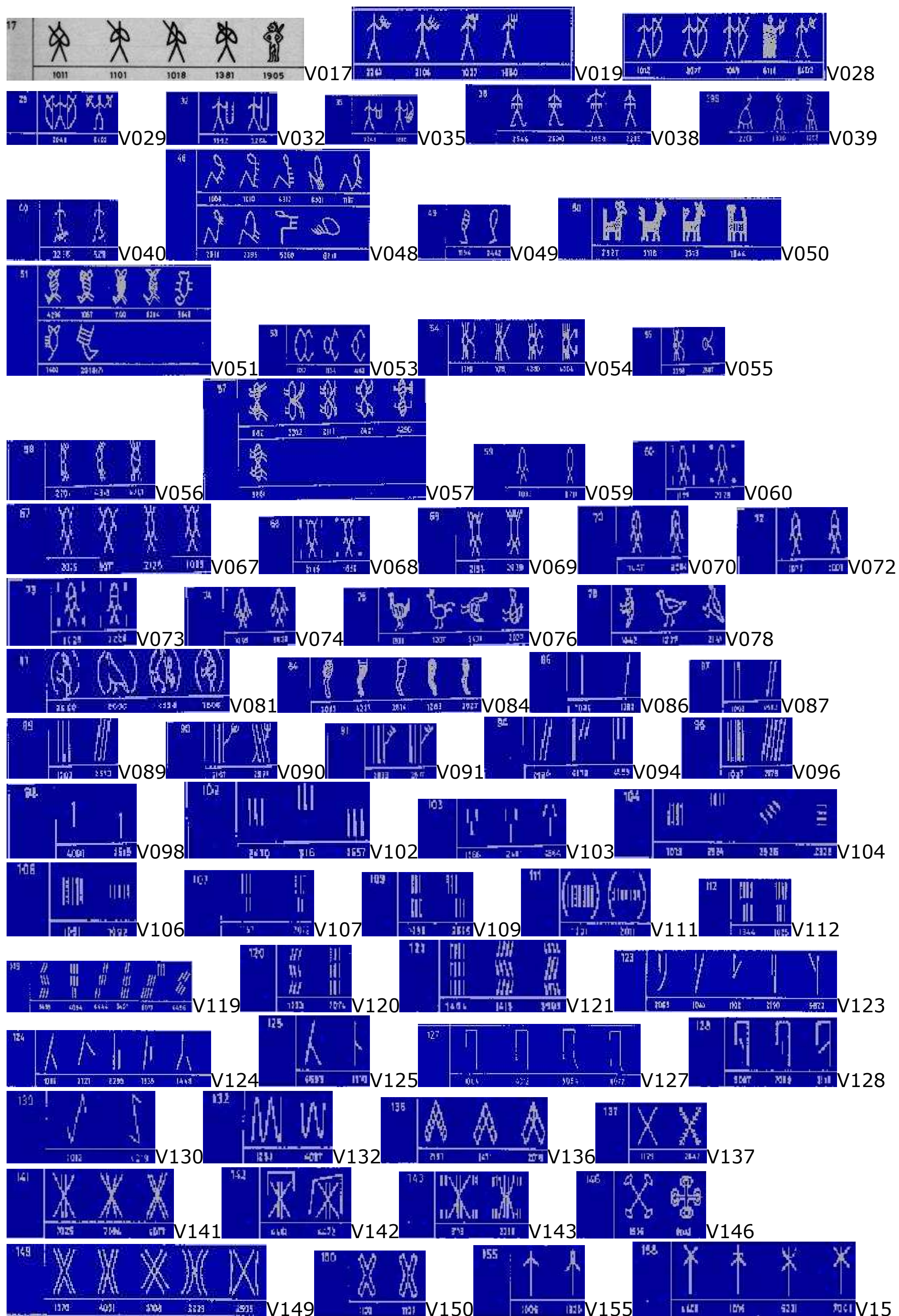
Hieroglyph Sign List

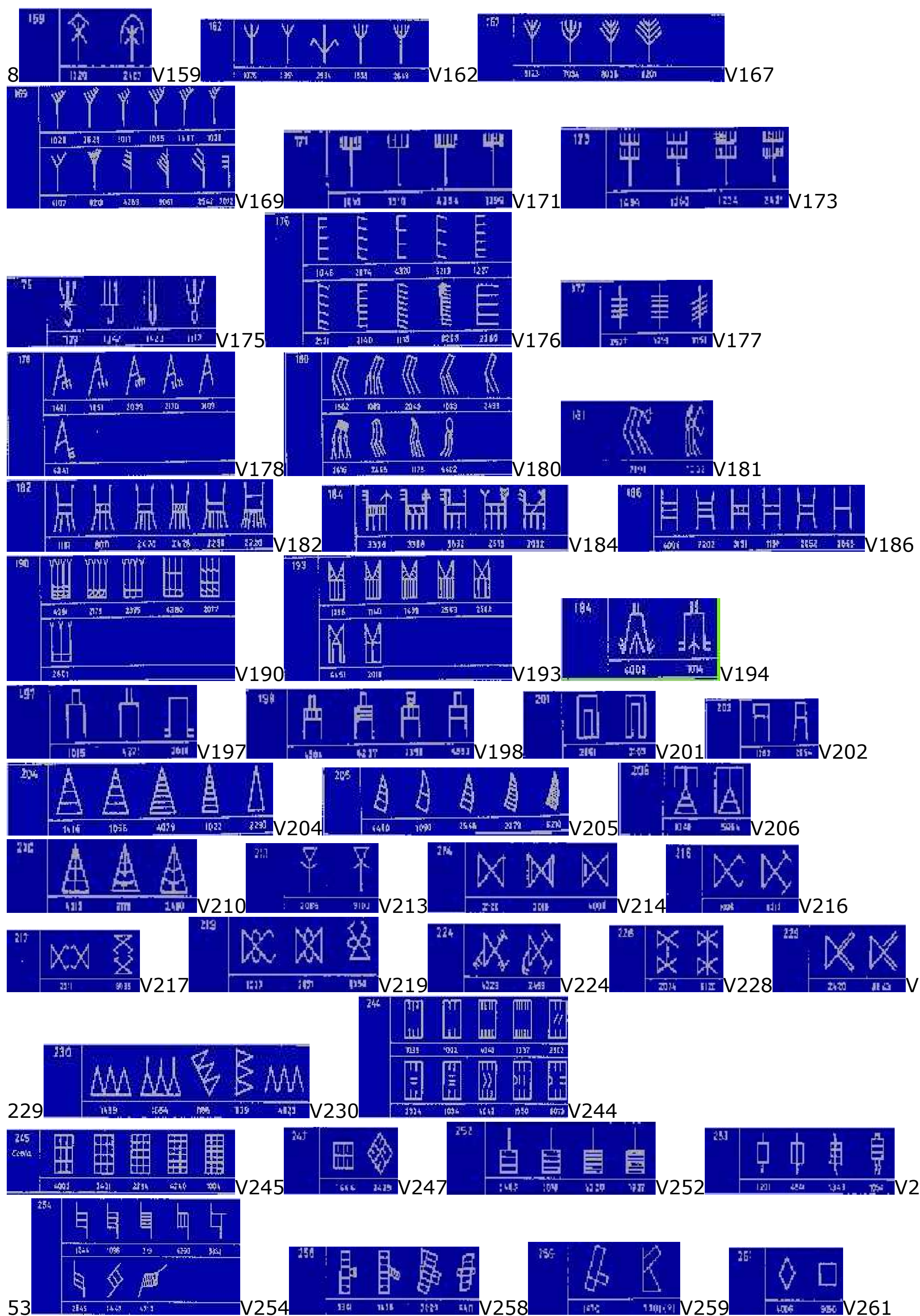
(After Mahadevan) (Excluding the pictorial motifs or field symbols such as standard device or one-horned heifer or short-horned bull or zebu or buffalo or elephant etc.)

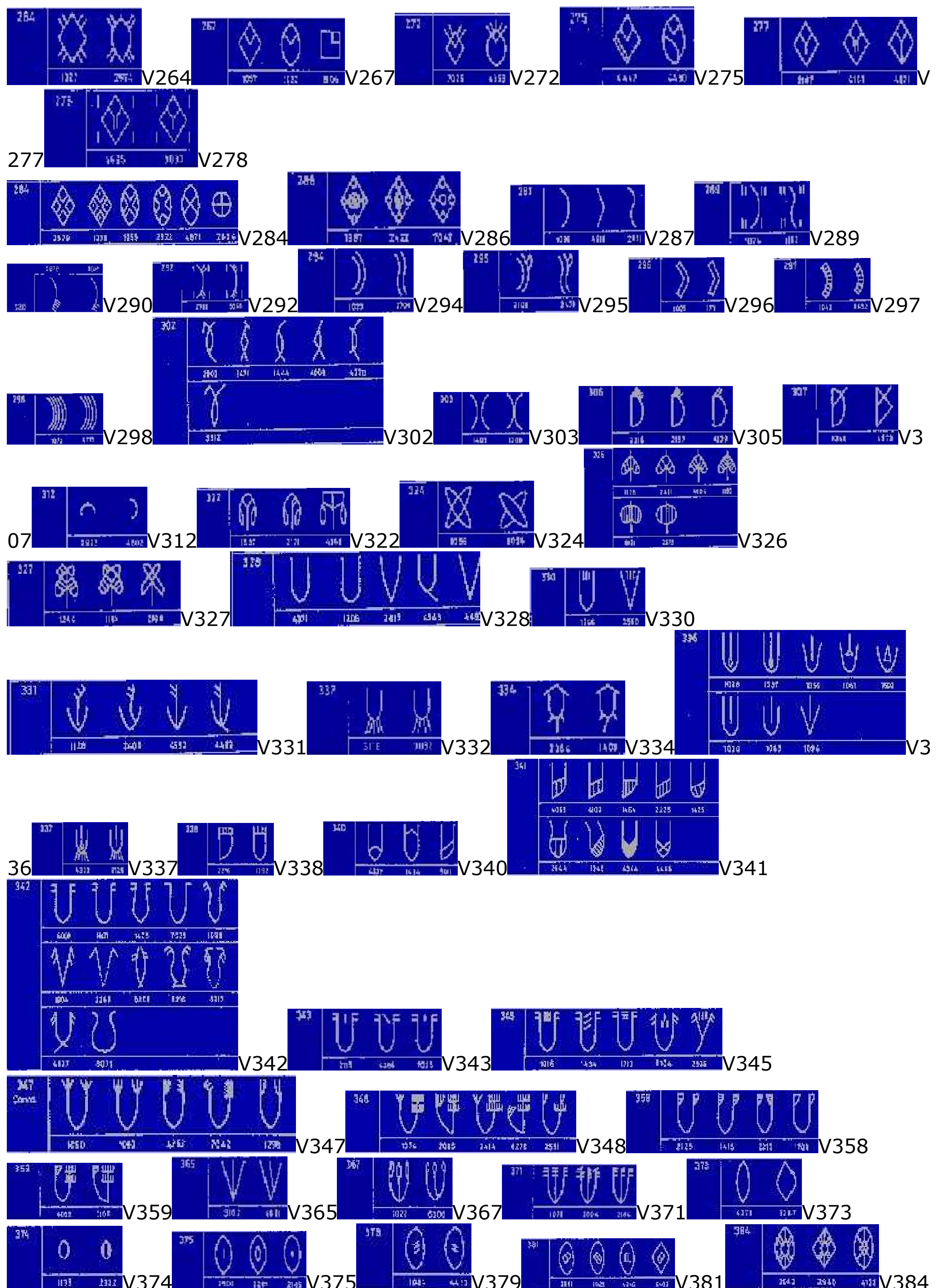


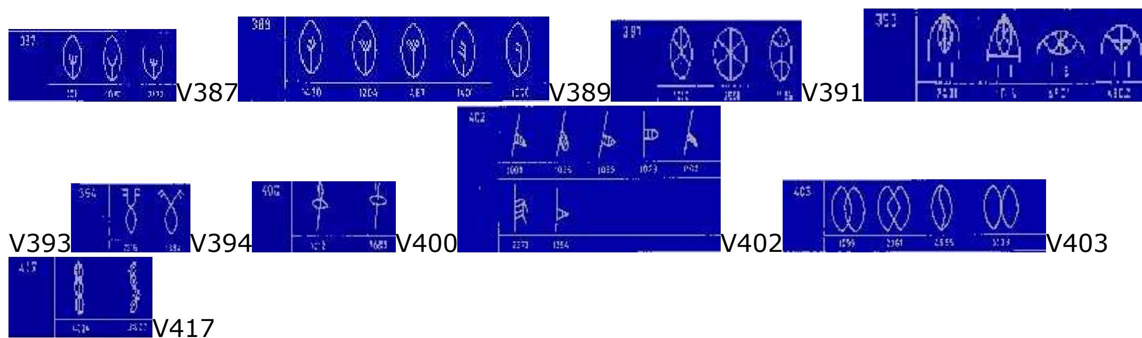
Sign Variants

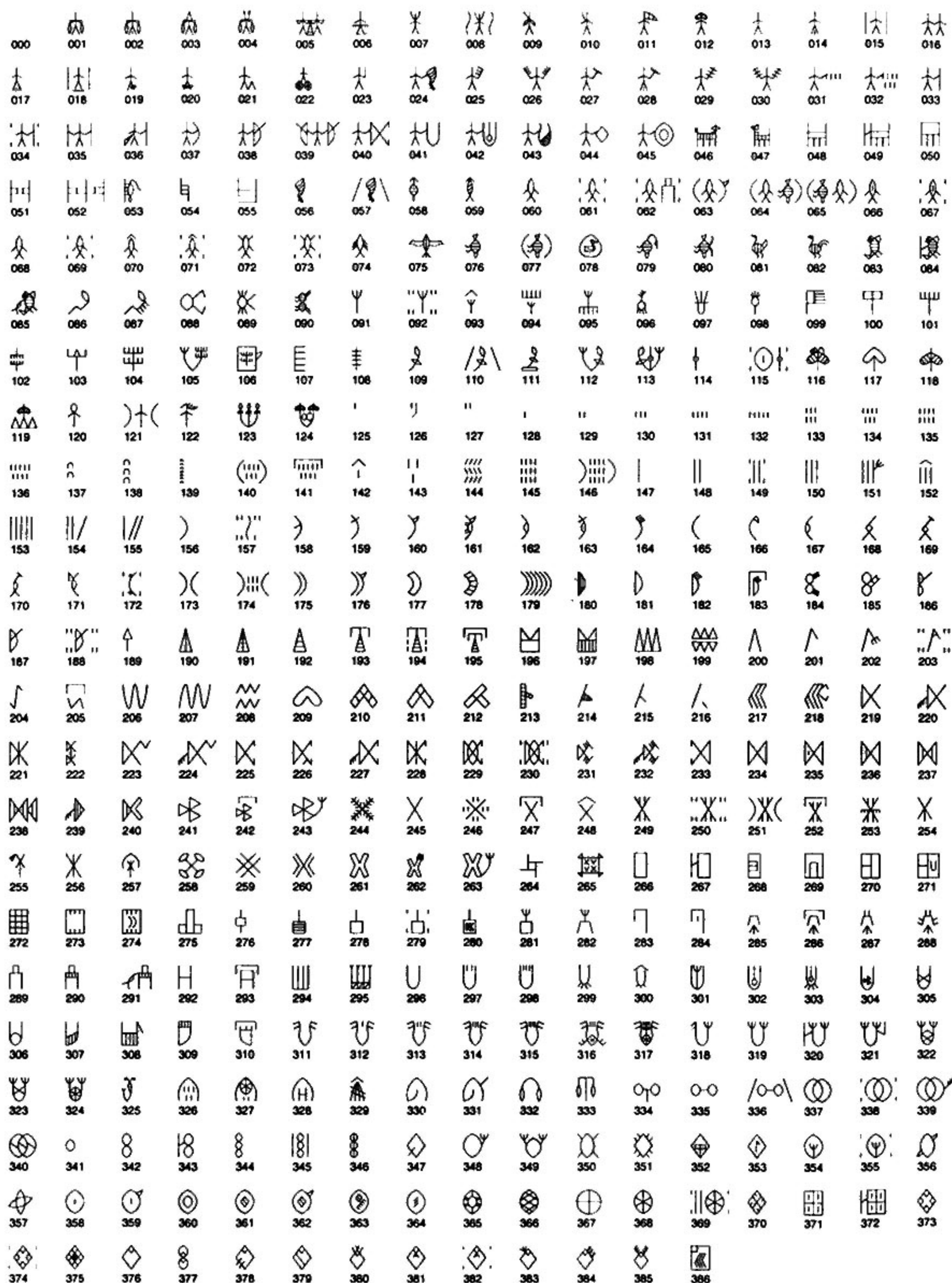



V017
V019
V028
V029
V032
V035
V038
V039
V040
V048
V049
V050
V051
V053
V054
V055
V056
V057
V059
V060
V067
V068
V069
V070
V072
V073
V074
V076
V078
V081
V084
V086
V087
V089
V090
V091
V094
V096
V098
V102
V103
V104
V106
V107
V109
V111
V112
V119
V120
V121
V123
V124
V125
V127
V128
V130
V132
V136
V137
V141
V142
V143
V146
V149
V150
V155
V15


8
V159
V162
V167
V169
V171
V173
V175
V176
V177
V178
V180
V181
V182
V184
V186
V190
V193
V194
V197
V198
V201
V202
V204
V205
V206
V210
V213
V214
V216
V217
V219
V224
V228
V
229
V230
V244
V245
V247
V252
V2
53
V254
V258
V259
V261


V264
V267
V272
V275
V
277
V278
V284
V286
V287
V289
V290
V292
V294
V295
V296
V297
V298
V302
V303
V305
V3
07
V312
V322
V324
V326
V327
V328
V330
V331
V332
V334
V3
36
V337
V338
V340
V341
V342
V343
V345
V347
V348
V358
V359
V365
V367
V371
V373
V374
V375
V379
V381
V384


V387
V389
V391
V393
V394
V400
V402
V403
V417

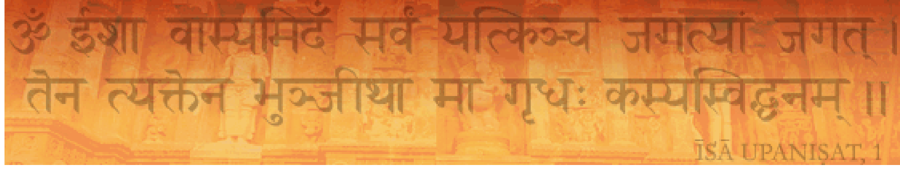


Sign list created in 1995 by Tuomo Saarikivi and Bertil Tikkanen

Mleccha and *mlecchita vikalpa* in Sarasvati hieroglyphs (Decoding Indus script as a writing system)

akṣarasamāmnāya
Māheśvara sūtrāṇi

१. अ इ उ ण्।	८. झ भ ञ्।
२. ऋ ऌ क्।	९. घ ढ ध ष्।
३. ए ओ ङ्।	१०. ज ब ग ड द श्।
४. ऐ औ च्।	११. ख फ छ ठ थ च ट त व्।
५. ह य व र ट्।	१२. क प य्।
६. ल ण्।	१३. श ष स र्।
७. ञ म ङ ण न म्।	१४. ह ल्।



சொல்லென்றது நாமகளாகிய தெய்வம் (தொல். சொல். 57, சேனா.)
"All words are semantic indicators." (Tol. Peya.1)

S. Kalyanaraman, Ph.D.,
Director, Sarasvati Research Centre
kalyan97@gmail.com Resources at:
http://sites.google.com/site/kalyan97 26 Feb. 2009

This is a tribute to श्री Mahadevan, Parpola and scholars of Indian civilization studies. This is पितृऋण M. ऋण [ṛṇa] *n* (S) Debt. Three departments of man's debt are reckoned, viz. देवऋण, ऋषिऋण, पितृऋण, q. v. This is thus a homage to पितृ who have given us a civilization under dharma or அறம் aṟam , *n*. < அறு [1]-. [K. *aṟa*, M. ***aṟam***.] 1. Moral or religious duty, virtue, performance of good works according to the Šāstras, duties to be practiced. < அறு -தல் aṟu- : notes with another;
தானறிந்ததைப் பிறனறிவோடு ஒப்புநோக்கக் கேட் குங்கேள்வி. (நன். 385, விருத்.)
Raison d'etre of my life: repay पितृऋण – a homage to पितृ who have given me my social identity and goals of life, puruṣārtha.

Most of the ca. 500+ glyphs and glyptic elements have been identified with precision (without ambiguity) thanks to the brilliant work done by Mahadevan, Parpola and other scholars who have contributed to unraveling the orthography and structure of the writing system

Each glyph is a potential resource for relating the glyph to glosses of Indian languages to identify mleccha glosses in the linguistic area

Isoglosses will help reconstruct proto-mleccha and proto-vedic.

Glyptic semantic clusters decode the writing system using the simple rebus method -- occam's razor (rebus: A representation of words in the form of pictures or symbols, often presented as a puzzle. From Latin *rebus*, ablative pl. of *res*, thing. – bartleby.com) and relating them to one semantic category: early workings in mines, early workings with minerals and metals – an industrial revolution of those ancient times.

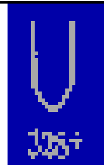
Three dancers, m1428C
Iron forge



Potsherd from Bhirrana showing dance

kolom ‘three’(Mu.); kolami ‘forge’ (Te.)
meḍ ‘body’, ‘dance’ (Santali); meṛed ‘iron’ (Mu.); meḍ ‘iron’ (Ho.)





S. baṭhu m. ‘large pot in which grain is parched, large cooking fire’, baṭhī f. ‘distilling furnace’; L. bhaṭṭh m. ‘grain—parcher's oven’, bhaṭṭhī f. ‘kiln, distillery’, awāṇ. bhaṭh; P. bhaṭṭh m., °ṭhī f. ‘furnace’, bhaṭṭhā m. ‘kiln’; S. bhaṭṭhī keṇī ‘distil (spirits)’. (CDIAL 9656)

bhaṭa ‘warrior’; bhaṭa ‘six’ (G.)

damra = heifer, young bull, steer (G.); rebus: **tambra** = copper (Skt.)
damaḍi_ (H.) **damṛi, dambṛi** = one eighth of a copper pice (Santali)

bail ‘bull, ox’; bali ‘iron sand ore’ (Santali)
kuṭi ‘tree’; kuṭhi ‘smelter furnace’
baṭa = quail; rebus: **baṭa** = kiln (Santali); baṭa = a kind of iron (G.); gāḍ गाड्‌ । मीनः f. a **fish** (K.Pr. 14, 38, 63, 14, 15, 168, 258; H. i, 8, 9) (Kashmiri) **gaḍa—** 4 m. ‘young of the fish Ophiocephalus lata or Cyprinus garra’, °*aka*— m. lex. B. *gaṛ, gaṛai* ‘species of gilt—head fish’; Or. *gaṛiśa*, °*śā* ‘the fish O. lata’, *gaḷa* ‘a kind of fish’.(CDIAL 3970) ***Tu.* kandůka, kandaka** ditch, trench. ***Te.* kandakamu** id. *Konḍa* **kanda** trench made as a fireplace during weddings. ***Pe.* kanda** fire trench. ***Kui* kanda** small trench for fireplace. ***Malt.* kandri** a pit. (DEDR 1214)
beḍa = fish (Santali); rebus: **beḍa** = hearth (G.) *barea* = two, a pair; rebus: **baṛae** = blacksmith (Santali)

- Tell Suleimeh (level IV), Iraq; IM 87798; (al-Gailani Werr, 1983, p. 49 No. 7). A fish over a short-horned bull and a bird over a one-horned bull; cylinder seal impression, (Akkadian to early Old Babylonian). Gypsum. 2.6 cm. Long 1.6 cm. Dia. [Drawing by Larnia Al-Gailani Werr. Cf. Dominique Collon 1987, *First impressions: cylinder seals in the ancient Near East*, London: 143, no. 609]
- Tree in front. Fish in front of and above a one-horned bull. Cylinder seal impression (IM 8028), Ur, Mesopotamia. White shell. 1.7 cm. High, dia. 0.9 cm. [Cf. T.C. Mitchell, 1986, Indus and Gulf type seals from Ur in: Shaikha Haya Ali Al Khalifa and Michael Rice, 1986, *Bahrain through the ages: the archaeology*, London: 280-1, no.8 and fig. 112]. "No.7...A bull, unhumped, of the so-called 'unicorn' type, raises his head towards a simplified version of a tree, and two uncertain objects, one a sort of trefoil, are shown above his back. Under his head is an unmistakable character of the Indus script, the 'fish' with cross-hatchings..." (C.J. Gadd, Seals of Ancient Indian Style Found at Ur', in: G.L. Possehl, ed., 1979, *Ancient Cities of the Indus*, Delhi, Vikas Publishing House, p. 117).

Trough hieroglyph

பத்தர்² **pattar** , *n*. < T. *battuḍu*. A guild title of goldsmiths

பத்தர்² **pattar** , *n*. < T. *battuḍu*. A caste title of goldsmiths; தட்டார் பட்டப்பெயருள் ஒன்று. பட்டடை¹ paṭṭaṭai , *n*. prob. படு¹- + அடை¹-. 1. [T. *paṭṭika*, K. *paṭṭaḍe*.] Anvil; அடைகல். (பிங்.) சீரிடங்காணி னெறிதற்குப் பட்ட டை (குறள், 821). 2. [K. *paṭṭaḍi*.] Smithy, forge; கொல்லன் களரி பத்தல் pattal , *n*. 1. A wooden bucket; மரத்தாலான நீரிறைக்குங் கருவி. தீம்பிழி யெந்திரம் பத்தல் வருந்த (பதிற்றுப். 19, 23). பத்தர்¹ **pattar** , *n*. 1. See பத்தல், 1, 4, 5. 2. Wooden trough for feeding animals; தொட்டி. பன்றிக் கூழ்ப்பத்தரில் (நாலடி, 257). **paṭṭar-ai** community; guild as of workmen (Ta.); **pattar** merchants;

perh. vartaka

Kalibangan033 8025 m0527Bt 3336
m0573Bt 3415 Pict-39 Ox-antelope with a long tail; a trough in front. m0543At m0543Bt 3363
h094 4246 m0289 3121
m0486at m0486bt
m0486ct 1625 m1405At Pict-97: Person standing at the center pointing with his right hand at a bison facing a trough, and with his left hand pointing to the sign

Precious stone

Pa. Pk. *patthara* -- m. □ stone □, S. *patharu* m., L. (Ju.) *pathar* m., khet. *patthar*, P. *patthar* m. (→ forms of Bi. Mth. Bhoj. H. G. below with *atth* or *ath*), WPah.jaun. *pātthar*; Ku. *pāthar* m. □ slates, stones □, gng. *pāth**lr □ flat stone □; A. B. *pāthar* □ stone □, Or. *pathara*; Bi. *pāthar*, *patthar*, *patthal* □ hailstone □; Mth. *pāthar*, *pathal* □ stone □, Bhoj. *pathal*, Aw.lakh. *pāthar*, H. *pāthar*, *patthar*, *pathar*, *patthal* m., G. *patthar*, *pathrɔ* m.; M. *pāthar* f. □ flat stone □; Ko. *phāttaru* □ stone □; Si. *patura* □ chip, fragment □; -- S. *pathirī* f. □ stone in the bladder □; P. *pathrī* f. □ small stone □; Ku. *patharī* □ stone cup □; B. *pāthri* □ stone in the bladder, tartar on teeth □; Or. *pathurī* □ stoneware □; H. *patthrī* f. □ grit □, G. *pathrī* f. *prastarapaṭṭa -- , *prastaramr̥ttikā -- , *prastarāsa -- . Addenda: **prastará -- :** WPah.kṭg. *pátthər* m. □ stone, rock □; *pəthreuṇõ* □ to stone □; J. *pāthar* m. □ stone □; OMarw. *pātharī* □ precious stone □. (CDIAL 8857)

Rosetta stones to affirm links with metal work/trade

Invention of alloying necessitated invention of a writing system

(Kalibangan 089 sealing with 20 glyphs) Text 8101

Akkadian cylinder seal showing a Meluhhan (who needed an interpreter)

Two pure tin ingots cast with Sarasvati hieroglyphs discovered in a Haifa ship-wreck

Scores of inscriptions found on metal and on metallic celts, weapons (following slides)

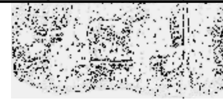
Continuity of tradition in devices punched by punch-marked/cast coin mints from Takṣaśila to Anuradhapura. (Sarasvati hieroglyphs continue to be used together with kharoshti/brahmi syllables)

Sohgaura copper plate; Rampurva pillar copper bolt with Sarasvati hieroglyphs

Ur cylinder seal with tagaraka shrub; rebus: tagromi ‘tin alloy’ (Kuwi)

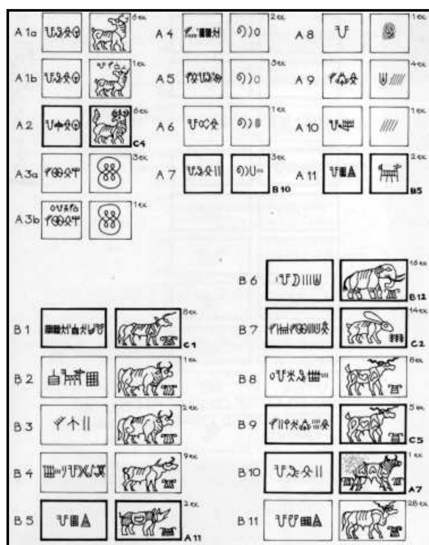


Terracotta tablet, Marshall 1931, Pl. CXVIII,9 ; WPah. dhaṭu m. (also dhaṭhu) m. 'scarf' (CDIAL 6707); Rebus: Pa. **dhātu** 'mineral'; damṛa, koḍiyum 'heifer' (G.) rebus: tam(b)ra 'copper'; koḍ 'workshop' (G.); ācāri koṭṭya 'smithy' (Tu.); śagaḍī (G.) = lathe san:gāḍo a lathe; sa~ghāḍiyo a worker on a lathe (G.lex.) san:gatarāśū = stone cutter (S.) jangāḍiyo 'military guard accompanying treasure' (G.)

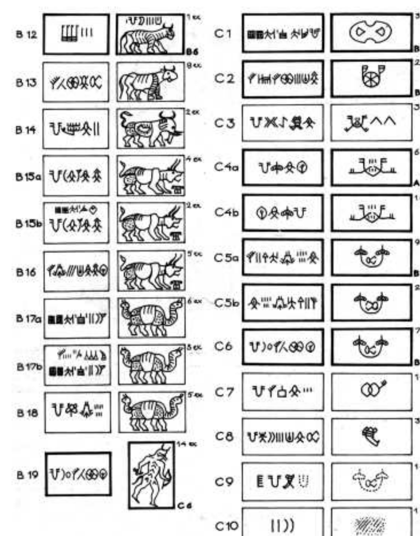


Rojdi. Ax-head or knife of copper, 17.4 cm. long (After Possehl and Raval 1989: 162, fig. 77; 8 cast copper tablets recovered from circular platforms, Harappa (200); m0475; Silver seal Mackay 1938, vol. 2, Pl. XC,1; XCVI, 520 ; Ras-al-Junayz copper seal; h018; copper seal, Mohenjodaro Indian museum;m0438;; m1449; ; m1452; m1486; m1493; m1498 m1501; m0582 (123 copper tablets)

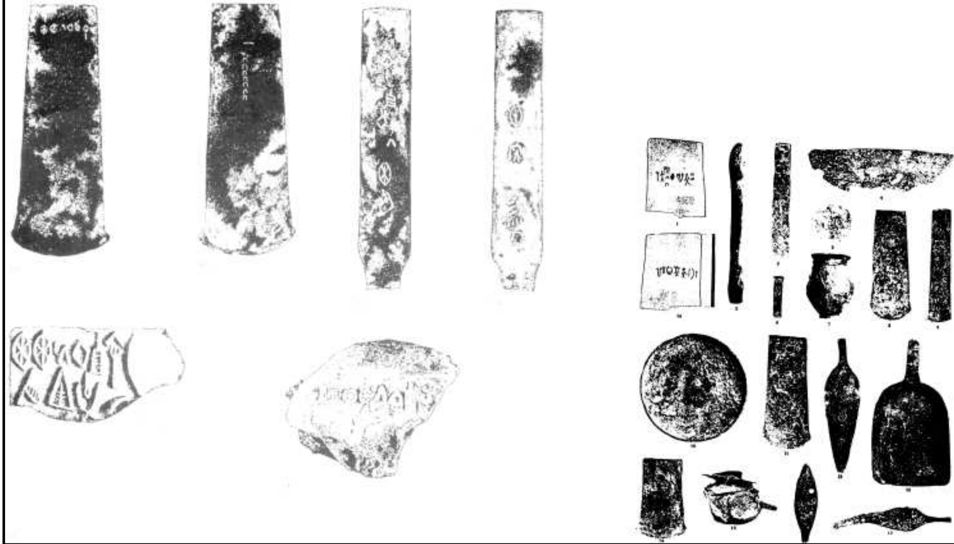




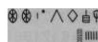
Copper tablets from Mohenjo-daro: an analysis –46 tablet groups [After Parpola, 1994, fig. 7.14].



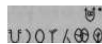
Chanhu-daro, Pl. LXXIV & Mohenjodaro: copper and bronze tools and utensils (an inscription line mirrored on a zebu seal)



Inscribed weapons are further reported from Harappa Vats 1940: 384ss, Pl. CXX, 5,19), Chanhu Daro (Mackay 1943: 178, Pl. LXXIV, 1-1a,8) and Kalibangan inscribed bronze rod (Mahadevan 1977:7).



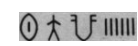
2925 Inscribed bronze implement (MIC Plate CXXVI-5)



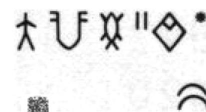
2903 Incised copper tablet



2923 Inscribed bronze implement (MIC PlatCXXVI-2)

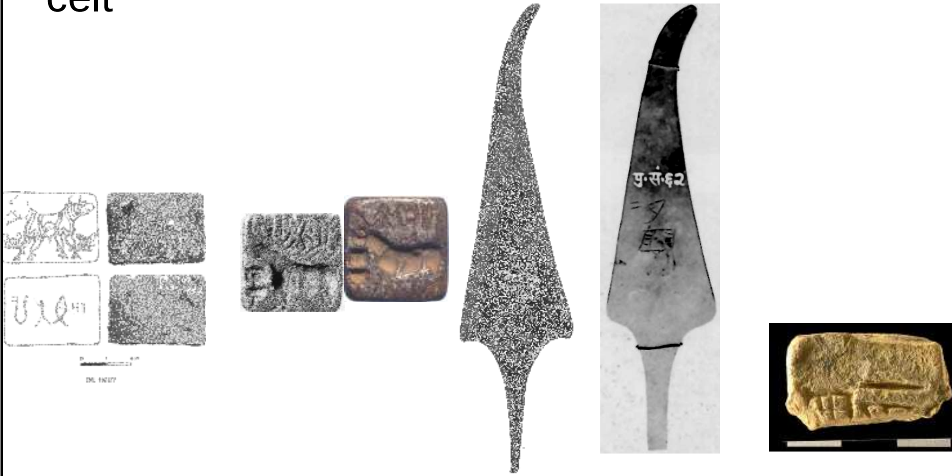


2924 Inscribed bronze implement (MIC Plate CXXVI-3)

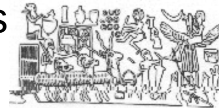




Mohenjo-daro. Copper tablet DK 11307 (SC 63.10/262); m0317silver; m1199 silver; h380-381 bronze daggers; slide 209 inscribed lead celt



Impression of an Akkadian cylinder seal Boehmer 1965: no.693: a man is offering a sword to the eagle-person; brazier is inscribing a vessel at the top-left.



Schoyen collection MS565 copper seal



Gadd Seal 1 U7683 with bison & cuneiform

Sag-kusita ? ‘Head moneylender’ ?



Ur cylinder seal with *taberna montana* plant, BM 122947; A soft-stone flask, 6 cm. tall, from Bactria (northern Afghanistan) showing a winged female deity (?) flanked by two flowers similar to those shown on the comb from Tell Abraq (After Pottier, M.H., 1984, *Materiel funeraire e la Bactriane meridionale de l'Age du Bronze*, Paris, Editions Recherche sur les Civilisations: plate 20.150) Ivory comb with Mountain Tulip motif and dotted circles. TA 1649 Tell Abraq. [D.T. Potts, South and Central Asian elements at Tell Abraq (Emirate of Umm al-Qaiwain, United Arab Emirates), c. 2200 BC—AD 400, in Asko Parpola and Petteri Koskikallio, *South Asian Archaeology 1993*: , pp. 615-666]

tagar = a flowering shrub; a plant in bloom (G.lex.) tagara = the shrub tabernaemontana coronaria, and a fragrant powder or perfume obtained from it, incense (Vin 1.203); *tagara-mallika_* two kinds of *gandha_* (P.lex.) *t.agara (tagara)* a spec. plant; fragrant wood (Pkt.lex.) *tagara* = a kind of flowering tree

(Te.lex.) Rebus: tagromi tin metal alloy (Kuwi)





Sarasvati hieroglyphs as made by mleccha [copper workers; 'milakkhu' (Pali); lapidaries 'sangatarāsū' (S.)]: mlecchita vikalpa is the writing system of the language, mleccha (Manu, Vātsyāna, śatapatha brāhmaṇa, MBh.) See bhāṣā -- Pāṇ and deśī of Hemacandra) Hieroglyphs continue to be used in mints for punch-marked coins – from Takṣaśila to Anuradhapura --and from early 10th cent. BCE* coin devices – averaging 5 per coin -- mostly a legacy of pictorial motifs and signs of Sarasvati hieroglyphs.) [*The date of 10th cent. BCE is mentioned in DR Bhandarkar, 1921, *Lectures on Ancient Indian Numismatics*, Univ. of Calcutta]

Rebus readings of almost all glyphs (pictorial motifs as well as signs) relate to mine workers' and metalsmiths' repertoire. The writing system is a vikalpa (alternative representation) of their vernacular, mleccha, cognate: meluhha. Presented in 15 e-books at http://sites.google.com/site/kalyan97

In view of the essentially pictographic nature of the writing system, the presentation is made in three parts:

1. powerpoint slides with the glyphs and readings;
2. monograph on vernacular (deśī), the linguistic area and the continuity of proto-mleccha vernacular; structure and semantics of hieroglyphs of mlecchita vikalpa, the decoded writing system; and
3. Epigraphica Sarasvati of about 4000 inscribed epigraphs on photo albums.

Hermeneutics and mleccha

Hermeneutics is the science of discovering new meanings and interpretations in 'all those situations in which we encounter meanings that are not immediately understandable but require interpretive effort' (Gadamer 1976: xii). Gadamer, Hans-Georg. 1976, *Philosophical Hermeneutics*, ed. and trans. by David E. Linge, Berkeley: University of California Press.

Such an interpretive effort has led to the decoding of Sarasvati hieroglyphs as the repertoire of miners and metalsmiths of the civilization in a linguistic area. The ancient words read rebus can be traced in many Bharatiya languages as borrowings from proto-mleccha (Language X + proto-Munda).

gāḍ गाड्   । मीनः   f. a **fish** (K.Pr. 14, 38, 63, 14, 15, 168, 258; H. i, 8, 9) (Kashmiri)

gaḍa— 4 m. 'young of the fish Ophiocephalus lata or Cyprinus garra', °*aka*— m. lex. B. *gaṛ, gaṛai* 'species of gilt—head fish'; Or. *gaṛiśa*, °*śā* 'the fish O. lata', *gaḷa* 'a kind of fish'.(CDIAL 3970)

- ***Tu.* kandůka, kandaka** ditch, trench. ***Te.* kandakamu** id. ***Konḍa* kanda** trench made as a fireplace during weddings. ***Pe.* kanda** fire trench. ***Kui* kanda** small trench for fireplace. ***Malt.* kandri** a pit. (DEDR 1214)
- ***khaḍḍa—** 'hole, pit'. [Cf. *gaḍḍa— and list s.v. kartá—1] Pk. *khaḍḍā*— f. 'hole, **mine**, cave', °*ḍaga*— m. 'one who digs a hole', °*ḍōlaya*— m. 'hole'; Bshk. (Biddulph) "*kād*" (= *khaḍ*?) 'valley'; K. *khŏḍ* m. 'pit', *khöḍü* f. 'small pit', *khoḍu* m. 'vulva'; S. *khaḍa* f. 'pit'; L. *khaḍḍ* f. 'pit, cavern, ravine'; P. *khaḍḍ* f. 'pit, ravine', °*ḍī* f. 'hole for a weaver's feet' (→ Ku. *khaḍḍ*, N. *khaḍ*; H. *khaḍ, khaḍḍā* m. 'pit, low ground, notch'; Or. *khāḍi* 'edge of a deep pit'; M. *khaḍḍā* m. 'rough hole, pit'); WPah. khaś. *khaḍḍā* 'stream'; N. *khāṛo* 'pit, bog', *khāṛi* 'creek', *khāṛal* 'hole (in ground or stone)'. — Altern. < *khāḍa—: Gy. gr. *xar* f. 'hole'; Ku. *khāṛ* 'pit'; B. *khāṛī* 'creek, inlet', *khāṛal* 'pit, ditch'; H. *khāṛī* f. 'creek, inlet', *khaṛ—ḥar*, °*al* m. 'hole'; Marw. *khāṛo* m. 'hole'; M. *khāḍ* f. 'hole, creek', °*ḍā* m. 'hole', °*ḍī* f. 'creek, inlet'. 3863 **khātra—** n. 'hole' HPariś., 'pond, spade' Uṇ. [√khan] Pk. *khatta*— n. 'hole, manure', °*aya*— m. 'one who digs in a field'; S. *khāṭru* m. 'mine made by burglars', °*ṭro* m. 'fissure, pit, gutter made by rain'; P. *khāt* m. 'pit, manure', *khāttā* m. 'grain pit', ludh. *khattā* m. (→ H. *khattā* m., *khatiyā* f.); N. *khāt* 'heap (of stones, wood or corn)'; B. *khāt, khātṛū* 'pit, pond'; Or. *khāta* 'pit', °*tā* 'artificial pond'; Bi. *khātā* 'hole, gutter, grain pit, notch (on beam and yoke of plough)', *khattā* 'grain pit, boundary ditch'; Mth. *khātā, khattā* 'hole, ditch'; H. *khāt* m. 'ditch, well', f. 'manure', *khātā* m. 'grain pit'; G. *khātar* n. 'housebreaking, house sweeping, manure', *khātriyũ* n. 'tool used in housebreaking' (→ M. *khātar* f. 'hole in a wall', *khātrā* m. 'hole, manure', *khātryā* m. 'housebreaker'); M. *khat* n.m. 'manure' (deriv. *khatāviṇẽ* 'to manure', *khāterẽ* n. 'muck pit'). — Un- expl. *ṭ* in L. *khāṭvã* m. 'excavated pond', *khāṭī* f. 'digging to clear or excavate a canal' (~ S. *khātī* f. 'id.', but *khāṭyāro* m. 'one employed to measure canal work') and *khaṭṭaṇ* 'to dig'. (CDIAL 3790)
- **gaḍa—** 1 m. 'ditch' lex. [Cf. *gaḍḍa—1 and list s.v. kartá—1] Pk. *gaḍa*— n. 'hole'; Paš. *gaṛu* 'dike'; Kho. (Lor.) *gōḷ* 'hole, small dry ravine'; A. *garā* 'high bank'; B. *gaṛ* 'ditch, hole in a husking machine'; Or. *gaṛa* 'ditch, moat'; M. *gaḷ* f. 'hole in the game of marbles'. 3981 ***gaḍḍa—** 1 'hole, pit'. [G. < *garda—? — Cf. *gaḍḍ—1 and list s.v. kartá—1] Pk. *gaḍḍa*— m. 'hole'; WPah. bhal. cur. *gaḍḍ* f., paṅ. *gaḍḍṛī*, pāḍ. *gaḍōṛ* 'river, stream'; N. *gaṛ—tir* 'bank of a river'; A. *gārā* 'deep hole'; B. *gāṛ*, °*ṛā* 'hollow, pit'; Or. *gāṛa* 'hole, cave', *gāṛiā* 'pond'; Mth. *gāṛi* 'piercing'; H. *gāṛā* m. 'hole'; G. *garāḍ*, °*ḍɔ* m. 'pit, ditch' (< *graḍḍa— < *garda—?); Si. *gaḍaya* 'ditch'. — Cf. S. *giḍi* f. 'hole in the ground for fire during Muharram'. — X khānī—: K. *gān* m. 'underground room'; S. (LM 323) *gāṇ* f. 'mine, hole for keeping water'; L. *gāṇ* m. 'small embanked field within a field to keep water in'; G. *gāṇ* f. 'mine, cellar'; M. *gāṇ* f. 'cavity containing water on a raised piece of land' WPah.kṭg. *gāṛ* 'hole (e.g. after a knot in wood)'. (CDIAL 3947)
- 3860 ***khāḍa—** 'a hollow'. [Cf. *khaḍḍa— and list s.v. kartá—1] S. *khāṛī* f. 'gulf, creek'; P. *khāṛ* 'level country at the foot of a mountain', °*ṛī* f. 'deep watercourse, creek'; Bi. *khārī* 'creek, inlet'; G. *khāṛi* , °*ṛī* f., °*ṛɔ* m. 'hole'. — Altern. < *khaḍḍa—: Gy. gr. *xar* f. 'hole'; Ku. *khāṛ* 'pit'; B. *khāṛī* 'creek, inlet', *khāṛal* 'pit, ditch'; H. *khāṛī* 'creek, inlet', *khaṛ—har*, °*al* m. 'hole'; Marw. *khāṛo* m. 'hole'; M. *khāḍ* f. 'hole, creek', °*ḍā* m. 'hole', °*ḍī* f. 'creek, inlet'.

खाण्डव : locus (Sarasvati river basin)

***Tu.* kandůka, kandaka** ditch, trench. ***Te.* kandakamu** id. ***Konḍa* kanda** trench made as a fireplace during weddings. ***Pe.* kanda** fire trench. ***Kui* kanda** small trench for fireplace. ***Malt.* kandri** a pit. (DEDR 1214) Pk. *khaḍḍā*— f. 'hole, mine, cave' (CDIAL 3790) The forest should have been full of mines. (Rajasthan, Khetri, Zawar mines?)

खाण्डव N. of a forest in कुरु-क्षेत्र (sacred to इन्द्र and burnt by Agni aided by अर्जुन and कृष्ण MBh. Hariv. BhP. i , 15 , 8 Kathas.) TandyaBr. xxv , 3 TAr.

Western Asia showing Mesopotamia, Turan, Dilmun,Meluhha

(Source: Magan and Meluhha. See Steinkeller 1984, 265)



Mleccha, mlecchita vikalpa

- Mlecchita vikalpa: Vatsyayana ‘cypher writing’
- *mleccha vācas* distinguished from ā*rya vācas* (*lingua franca* or deśi distinguished from literary Sanskrit) (Manu 10.45)
  - **mukhabāhurūpajjānām yā loke jātayo bahih**
  - **mlecchavācaś cāryavācas te sarve dasyuvah smṛtāh**
- “All those people of the world which are excluded from the (community of) those born from the mouth, the arms, the thighs and the feet (of Brahman) are called Dasyu, whether they speak the language of the mleccha or that of the aarya.” (Buhler). Alt. Mleccha dialect speakers and aarya dialect speakers are all remembered as dasyu. Thus, it is clear that there were two dialects in the linguistic area: mleccha vaacas and aarya vaacas.

Sarasvati civilization: linguistic area

- Emeneau, MB, 1956, India as a linguistic area, in: *Language*, 32.3-16
- Kuiper, FBJ, 1967, The genesis of a linguistic area, *Indo-Iranian Journal* 10: 81-102
- Masica, Colin P., 1976, *Defining a linguistic area, South Asia*, Chicago, University of Chicago Press
- Franklin Southworth, 2005, *Linguistic Archaeology of South Asia*, RoutledgeCurzon

Proto-Munda continuity and Language X

- F.B.J. Kuiper, 1948, *Proto-Munda Words in Sanskrit*, Amsterdam, Verhandeling der Koninklijke Nederlandsche Akademie Van Wetenschappen, Afd. Letterkunde, Nieuwe Reeks Deel Li, No. 3, 1948 http://www.scribd.com/doc/12238039/mundalexemesinsanskrit
- Language 'X' to explain a large number of agriculture-related words with no IE cognates: Colin Masica, 1991, *Indo-Aryan Languages*, Cambridge Univ. Press

Mleccha, *lingua franca* (deśī -- vernacular)

" a very considerable amount (say some 40%) of the New Indo-Aryan vocabulary is borrowed from Munda, either via Sanskrit (and Prakrit), or via Prakrit alone, or directly from Munda; wide-branched and seemingly native, word-families of South Dravidian are of Proto-Munda origin; in Vedic and later Sanskrit, the words adopted have often been Aryanized, resp. Sanskritized. "In view of the intensive interrelations between Dravidian, Munda and Aryan dating from pre-Vedic times even individual etymological questions will often have to be approached from a Pan-Indic point of view if their study is to be fruitful. It is hoped that this work may be helpful to arrive at this all-embracing view of the Indian languages, which is the final goal of these studies." (p. 9)." (FBJ Kuiper, opcit., 1948)

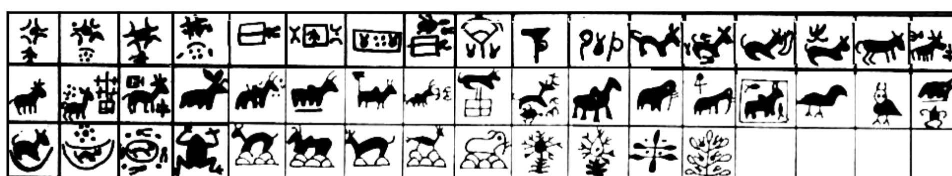
Language X

- Sources of OIA agricultural vocabulary (based on Masica 1979) Percentage
  - IE/IIr 40%
  - Drav 13%
  - Munda 11%
  - Other 2%
  - Unknown 34%
  - Total 100%
- Hence, a Language X is postulated
- Since there is cultural continuity in India from the days of Sarasvati civilization, it is possible to reconstruct Language X by identifying isoglosses in the linguistic area.

Writing system developed by literates

Selected 8 slides presented by Asko Parpola (2007) have been included in this ppt. The slides establish that the writing system of 'Indus script' is representation of speech, and is not an arbitrary assemblage of unspoken, unspeakable, arbitrarily selected symbols by 'illiterates' (as some have alleged without explaining the functions served by each selected glyph).

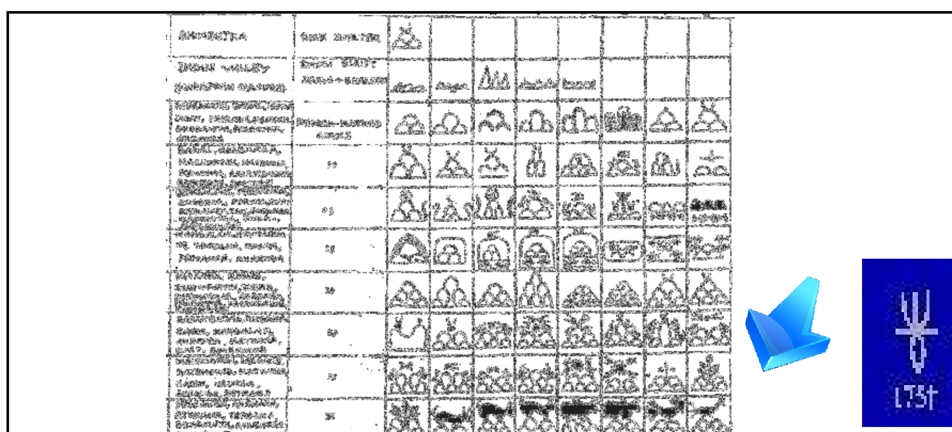
The onus is on such "Harappan illiteracy proponents" to avoid acts of faith, but explain how the glyphs relate to heraldry or agriculture or any myths, magic, rituals, religious, socio-political or economic functions of the creators of the glyphs. http://www.ejvs.laurasianacademy.com/ejvs1102/ejvs1102article.pdf



Pl. 5, A to C, Amaravati punch-marked coin symbols]

kūṭamu = the summit of a mountain (Te.lex.) kōṭu summit of a hill, peak, mountain (Ta.) (DEDR 2049) Pa. *kūṭa* -- n. summit, *kūḍa* -- n.; Si. *kuḷa* mountaintop (CDIAL 3395) Rebus: **kūṭakamu** = mixture (Te.lex.) **kūṭam** = workshop (Ta.) ā*ra* **kūṭa** 'brass' (Skt.)

Vikalpa: Marathi. डांग [ḍāṅga] *m n* (H Peak or summit of a hill.) Rebus: ḍāṅgar 'blacksmith' (H.); Nepali. डाङ्रे ḍāṅre , or *ḍā̃gre*, adj. Large; lazy; working with- out thoroughness or seriousness; -- s. A partic. kind of bird, the mainā; -- a contemptuous term for a **blacksmith** डाङ्रो ḍāṅro , or *ḍā̃gro*, s. A term of contempt used for a blacksmith (*kāmi*). [v.s.v. *ḍāṅre*.]

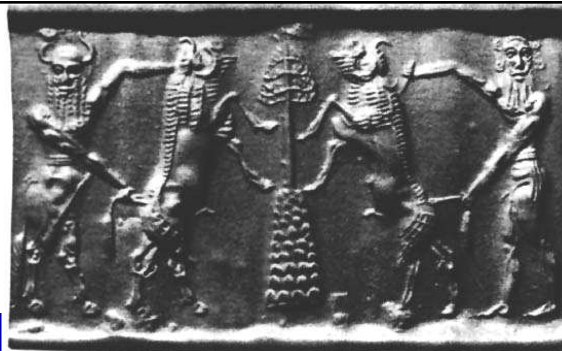


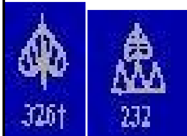
Pl.38, Mountain range symbol on punch-marked coins in comparison with the symbol on SSVC inscribed objects] As seen from the last three rows of Pl. 38, the ligaturing of glyphs to the mountain ranges indicates that the ligature elements are minerals found in mountains. e.g. Substantive: *aduru* 'native metal'; glyphs: *adar* 'brahman.i bull'; *aḍaru* 'twigs or branches of tree'. *ke~ṛe~ ke~ṛe~* call of quail at pairing season; *ce~ṛe* a bird; *ke~ṛe~ ko~ṛe~* an aboriginal tribe who work in brass and bell-metal (Santali) Other ligaturing glyphs: hare, goat, zebu, bird, tree, Sign 175. This sign also gets associated with svastika glyph.The ligature on Sign 175 may be compared with a retort used in a zinc distillation furnace, Zawar, Rajasthan (Next slide)

Zinc retort distillation furnace, Zawar, Rajasthan



http://www.indogold.com.au/images.htm





- The bulls flank a mountain topped by a leaf. Scene representing Gilgamesh and Ea-bani in conflict with bulls in a wooded and mountainous country; Cylinder seal impression, Mesopotamia British Museum No. 89308.

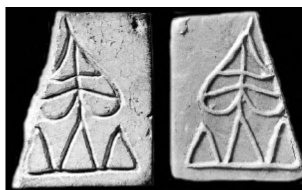
Is this glyph on the seal?
kolmo ‘graft’ (Ka.); rebus: kolami ‘smithy’ (Te.)

Cylinder seal and modern impression: hunting scene, 2250–2150 B.C.; late Akkadian period Mesopotamia Chert; H. 1 1/16 in. (2.8 cm) This seal, depicting a man hunting a markhor in a mountain forest, is an early attempt to represent a landscape in Mesopotamian art. It was made during the Akkadian period (ca. 2350–2150 B.C.), during which the iconographic repertory of the seal engraver expanded to include a variety of new mythological and narrative subjects. The owner of the seal was Balu-ili, a high court official whose title was Cupbearer. http://www.metmuseum.org/toah/ho/02/wam/hod_41.160.192.htm

minḍhāl ‘markhor’ (Tōrwālī) Rebus: meḍ ‘iron’ (Mu.) **kūṭamu** = summit of a mountain (Te.lex.) Rebus: **kūṭakamu** = mixture (Te.lex.) **kūṭam** = workshop (Ta.) The Sign 230 thus connotes an alloyed metal, **kūṭa** [e.g. copper + dhātu ‘mineral (ore)’ as in: **ārakūṭa** = brass (Skt.)] Vikalpa: *kala stag, buck (Ma.); kal a.r. Nilgiri ibex (Ko.); kalai stag, buck, male black monkey (Ta.); kalan:kompu stag’s horn (Ta.)(DEDR 1312) (capra sibirica hemalayanus) Rebus: kallan mason (Ma.); kalla glass beads (Ma.); kalu stone (Kond.a); xal id., boulder (Br.)(DEDR 1298).* ḍā~g = mountain-ridge (H.)(CDIAL 5476). ḍān:ro = a term of contempt for a blacksmith (N.)(CDIAL 5524). ṭhākur = blacksmith (Mth.) (CDIAL 5488). *daṭhi, daṭi* the petioles and mid-ribs of a compound leaf after the leaflets have been plucked off, stalks of certain plants, as Indian corn, after the grain has been taken off (Santali) Substantive: **dhātu** ‘mineral’ (Vedic); a mineral, metal (Santali); **dhāta** id. (G.)

What does the mountain summit connote in mleccha? See next slides.

Leaf on Mountain summit Kalibangan053 Kotdiji burial vessel shard showing leaf





m1430C, body of bison, three heads: bison, antelope, bull; a pair of goat(s), tree



Mountain topped by a leaf gets stylized as an important motif. Pro-elamite glyptics. Leaf motif.



kūṭamu = summit of a mountain (Te.lex.) Rebus: **kūṭakamu** = mixture (Te.lex.) kū**ṭam** = workshop (Ta.) The Sign 230 thus connotes an alloyed metal, **kūṭa** [e.g. copper + dhātu 'mineral (ore)' as in: **ārakūṭa** = brass (Skt.)]

- *ḍaṭo* 'claws or pincers (chelae) of crabs'; *ḍaṭom* to seize with the claws or pincers, as crabs, scorpions (Santali)
- *daṭhi, daṭi* the petioles and mid-ribs of a compound leaf after the leaflets have been plucked off, stalks of certain plants, as Indian corn, after the grain has been taken off (Santali)
- Substantive: **dhātu** 'mineral' (Vedic); a mineral, metal (Santali); **dhāta** id. (G.)

Kalibangan053, Text 8036; Sibri-damb02E; m0665, text 1139; text 4823 (pottery)



Some examples of symbols on punch-marked coins.

ṭākuro = hill top (N.); ṭāngī = hill, stony country (Or.); **ṭān:gara** = rocky hilly land (Or.); ḍān:gā = hill, dry upland (B.); ḍā~g = mountain-ridge (H.)(CDIAL 5476).
ḍān:ro = a term of contempt for a blacksmith (N.)(CDIAL 5524). ṭhākur = blacksmith (Mth.) (CDIAL 5488).

Sattva 'glyph'; satavu 'pewter, zinc'



sathiyā (H.), sāthiyo (G.); satthia, sotthia (Pkt.) Svastikā sign

sam̐dhā́na— n. 'joint, union' TS., 'mixing (a drink)' ŚārṅgS., 'sour rice gruel' lex., 'bell—metal' MW., *ī*— f. 'foundry' lex. H. *sandhānā* m. 'pickle, acid preparation of bel and other fruits', *sandhānī* f. 'id., distilling, foundry' (CDIAL 12909)

Kashmiri. Grierson lex. zasath ज़स्थ or zasuth ज़सुथ् । त्रपु m. (sg. dat. zastas ज़स्तस), **zinc**, spelter, pewter (cf. Hindī *jast*). jasti **jasti** &above;स्ति &below; । त्रपुधातुविशेषनिर्मितम् adj. c.g. made of zinc or pewter. **jasth** स्थ । त्रपु m. (sg. dat. **jastas** स्तस्), **zinc**, spelter; pewter. **jastuvu** स्तुवु &below; । त्रपूद्भवः adj. (f. **jastüvü** स्त &above;वू &below;), made of zinc or pewter.

satavu, satuvu, sattu = pewter, zinc (Ka.) dosta = zinc (Santali) jasada, yasada, yasadyaka, yasatva = zinc (Jaina Pali) ruhi-tutiya (Urdu) tuttha (Arthas'a_stra) totamu, tutenag (Te.) oriechalkos (Gk.)



koḍ = place where artisans work (G.lex.) koṭiyum = a wooden circle put round the neck of an animal; koṭ = neck (G.lex.) kōṭu = horns (Ta.)

kōḍiya, kōḍe = young bull (G.)

dol = likeness, picture, form (Santali) [e.g., two tigers, two bulls, duplicated

signs] me~ṛhe~t iron; ispat m. = steel; **dul** m. = cast iron (Santali)





lo 'iron' (Assamese, Bengali); **loa** 'iron' (Gypsy) Glyph: *lo* = nine (Santali); *no* = nine (B.) *on-patu* = nine (Ta.)

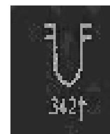
- m0296 Two heads of one-horned bulls with neck-rings, joined end to end (to a standard device with two rings coming out of the top part?), under a stylized tree with **nine leaves**.
- Zebu and leaves. In front of the standard device and the stylized tree of 9 leaves, are the black buck antelopes. Black paint on red ware of Kulli style. Mehi. Second-half of 3rd millennium BCE. [After G.L. Possehl, 1986, *Kulli: an exploration of an ancient civilization in South Asia*, Centers of Civilization, I, Durham, NC: 46, fig. 18 (Mehi II.4.5), based on Stein 1931: pl. 30.

khanaka m. one who digs , digger , excavator MBh. iii , 640 R. ; a miner L. ; a house-breaker , thief L. ; a rat L. ; N. of a friend of Vidura MBh. i , 5798 f. ; (%{I}) f. a female digger or excavator Pāṇ.

3-1 , 145 Pat. ; iv , 1 , 41 Ka1s3.

- **The rim of a jar is kaṇḍ kan-ka (Santali)**
- **kaṇḍ is pot; kan-ka in Sanskrit is karṇaka 'ear or rim of jar'. kaṇḍ also means 'fire-altar'.**
- Daimabad seal (ca. 1400 BCE) Frequency of occurrence of sign: 1395





M1656 pectoral: Frequency of occurrence of glyph composition: 1159
kaṇḍa = a pot of certain shape and size (Santali) Rebus: **kaṇḍ** = altar, furnace (Santali)
kanka ‘rim’; **khanaka** ‘miner’



kammarsāla 'pannier' (Telugu) **karmāraśāla** = workshop of blacksmith (Skt.)
koḍiyum ‘heifer’ (G.); koṭ ‘workshop’ (Kuwi) Rebus: **koṭe meṛed** = forged iron, in contrast to **dul meṛed**, cast iron (Mundari.lex.) **damṛa** m. a steer (G.) ; **tamb(r)a** = copper (Skt.); **tamba** = copper (Santali) Hence, **koṭe** = forge (Santali)

er-e = to cast, as metal; to overflow (Ka.) **er-aka** = any metal infusion (Ka.Tu.) ***Ta.* vār (-v-, -nt-)** to flow, trickle, overflow (DEDR 535)வார்ப்பு vārppu *n.* < வார்²-. 1. Pouring; ஒழுக்குகை. 2. **Casting;** உருக்கி வார்க்கை. வார்ப்பி னமைத்த யாப்பமை யரும்பொறி (பெருங். இலாவாண.

18, 24).

kanka ‘rim (of jar, kaṇḍ)’ (Santali)

kárṇa— m. ‘ear, handle of a vessel’ RV., ‘end, tip (?)’ RV. ii 34, 3. [Cf. *kāra—6] Pa. *kaṇṇa*— m. ‘ear, angle, tip’; Pk. *kaṇṇa*—, °*a ḍaya*- m. ‘ear’, Gy. as. pal. eur. *kan* m., Ash. (Trumpp) *karna* NTS ii 261, Niṅg. *kõmacr;*, Woṭ. *kanƏ*, Tir. *kana*; Paš. *kan*, *kaṇ*(*ḍ*)— ‘orifice of ear’ IIFL iii 3, 93; Shum. *kõmacr;ṛ* ‘ear’, Woṭ. *kan* m., Kal. (LSI) *kuṛõmacr;*, rumb. *kuŕũ*, urt. *kŕã¨*(< *kaṇ), Bshk. *kan*, Tor. *k* *l *ṇ*, Kand. *kōṇi*, Mai. *kaṇa*, ky. *kān*, Phal. *kāṇ*, Sh. gil. *koṇ* pl. *koṇí* m. (→ Ḍ *kon* pl. *k* *l *ṇa*), koh. *kuṇ*, pales. *kuāṇƏ*, K. *kan* m., kash. pog. ḍoḍ. *kann*, S. *kanu* m., L. *kann* m., awāṇ. khet. *kan*, P. WPah. bhad. bhal. cam. *kann* m., Ku. gng. N. *kān*; A. *kāṇ* ‘ear, rim of vessel, edge of river’; B. *kāṇ* ‘ear’, Or. *kāna*, Mth. Bhoj. Aw. lakh. H. *kān* m., OMarw. *kāna* m., G. M. *kān* m., Ko. *kānu* m., Si. *kaṇa*, *kana.* — As adverb and postposition (*ápi kárṇē* ‘from behind’ RV., *karṇē* ‘aside’ Kālid.): Pa. *kaṇṇē* ‘at one's ear, in a whisper’; Wg. *ken* ‘to’ NTS ii 279; Tir. *kõ;* ‘on’ AO xii 181 with (?); Paš. *kan* ‘to’; K. *káni* with abl. ‘at, near, through’, *kani* with abl. or dat. ‘on’, *kun* with dat. ‘toward’; S. *kani* ‘near’, *kanã¯*‘from’; L. *kan* ‘toward’, *kannũ* ‘from’, *kanne* ‘with’, khet. *kan*, P. ḍog. *kanē* ‘with, near’; WPah. bhal. *k* *l *ṇ*, °*ṇi*, *k* e *ṇ*, °*ṇi* with obl. ‘with, near’, *kiṇ*, °*ṇiã¯*, *k* *l *ṇiã¯*, *k* e *ṇ*° with obl. ‘from’; Ku. *kan* ‘to, for’; N. *kana* ‘for, to, with’; H. *kane*, °*ni* , *kan* with *ke* ‘near’; OMarw. *kanai* ‘near’, *kanã¯sā* ‘from near’, *kã̄ñĩ¯*‘towards’; G. *kan* e ‘beside’. Addenda: **kárṇa—:** S.kcch. *kann* m. ‘ear’, WPah.kṭg. (kc.) *kān*, poet. *kanṛu* m. ‘ear’, kṭg. *kanni* f. ‘pounding—hole in barn floor’; J. *kā'n* m. ‘ear’, Garh. *kān*; Md. *kan*— in *kan—fat* ‘ear’ (CDIAL 2830)

Dotted circle with san:gaḍa 'lathe, furnace'

Pict-123 Standard device which is normally in front of a one-horned bull. The device is flanked by columns of dotted circles.

m0008, m0021, h228B













Carved Ivory Standard in the middle
har501 Harappa 1990 and 1993. Standard device, model reconstructed after Mahadevan

gaṭṭi ban:gāru = gold in ingots or bars (Te.)



Seed glyph; koṭṭa 'seed' (Ma.); rebus: koṭe 'forging (metal)(Mu.) Ligature: meḍ 'body'; rebus: 'iron' (Ho.)

Ta. **akai (-v-, -nt-)** to flourish, sprout; **(-pp-, -tt-)** to sprout, rise; to raise; **akaippu** rising, elevation. ***Ma.*** **aka** germ, bud, shoot; **akekka** to bud; **ava** bud, esp. the fruit-like sprout of ***Artocarpus*; avekka** to sprout. ***Ka.*** **age** seedling, shoot from the root of a plant or tree, sprout. ***Koḍ.*** **age** paddy seedling. ***Tu.*** **agge** the shoot of a branch. ***Kur.*** **akhuā** seed-bud, sprout, shoot; **akrārnā** to germinate, shoot, sprout. (DEDR 15) agasāle 'goldsmithy' (Te.)

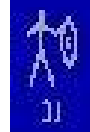
Konḍa **kūli** paddy. ***Pe.*** **kūli** id. ***Manḍ.*** **kūli** id. ***Kui*** **kūḍi** grain, paddy, seed. (DEDR 1906)

கொட்டை ***koṭṭai***

, n. 1. [T. K. Tu. koṭṭe, M. koṭṭa.] Seed of any kind not enclosed in chaff or husk, nut, stone, kernel ***Ta.*** **koṭṭai** seed of any kind not enclosed in chaff or husk, nut, stone, kernel; testicles; ***Ka.*** **koṭṭe, goṟaṭe** stone or kernel of fruit, esp. of mangoes; **goṭṭa** mango stone. ***Koḍ.*** **koranḍi** id. ***Tu.*** **koṭṭè** kernel of a nut, testicles; **koṭṭañji** a fruit without flesh; **koṭṭayi** a dried areca-nut; **koranṭu** kernel or stone of fruit, cashew-nut; **goṭṭu** kernel of a nut as coconut, almond, castor-oil seed; ***Kol.*** (Kin.) **goṟva** stone of fruit. ***Nk.*** **goṟage** stone of fruit. ***Kur.*** **goṭā** any seed which forms inside a fruit or shell. ***Malt.*** **goṭa** a seed or berry. (DEDR 2069).

***gōṭṭa—** 'something round'. [Cf. guḍá—1. — In sense 'fruit, kernel' cert. ← Drav., cf. Tam. *koṭṭai* 'nut, kernel'; A. *goṭ* 'a fruit, whole piece', °*ṭā* 'globular, solid', *guṭi* 'small ball, seed, kernel'; B. *goṭā* 'seed, bean, whole'; Or. *goṭā* 'whole, undivided', *goṭi* 'small ball, cocoon', *goṭāli* 'small round piece of chalk'; Bi. *goṭā* 'seed'; Mth. **goṭa** 'numerative particle' (CDIAL 4271)





Pali. Kammāra [Vedic karmāra] a smith, a worker in metals generally D ii.126, A v.263; a silversmith Sn 962= Dh 239; J i.223; a goldsmith J iii.281; v.282. The smiths in old India do not seem to be divided into black -- , gold -- and silver -- smiths, but seem to have been able to work equally well in iron, gold, and silver, as can be seen e. g. from J iii.282 and VvA 250, where the smith is the maker of a needle. They were constituted into a guild, and some of them were well -- to -- do as appears from what is said of Cunda at D ii.126; owing to their usefulness they were held in great esteem by the people and king alike J iii.281.**--kula** a smithy M i.25

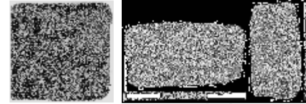
- M1185, m1431A, Sibridamb01A (tiger looking back; obverse: X)
- karmārakula 'smithy' (Pa.) Rebus: kol 'tiger'; krammara 'turn back' (Te.); rebus: kamar 'metalsmith' (Santali) kol 'tiger'; rebus: kol 'pancaloha' (Ta.)

క్రమ్మరు (p. 0333) [krammaru] *krammaru*. [Tel.]

v. n. To turn, return, go back.



krammar-ucu, krammarincu = to turn back (Te.) *kamra = the back (Skt.); krem = the back (Kho.)(CDIAL 2776).

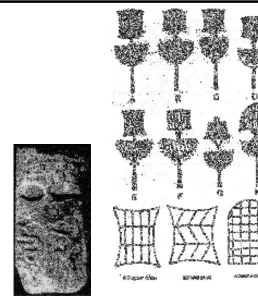


- M1452 copper plate; molded tablet, harappa: antelope and tiger look back (*mlekh* 'goat' (Br.); rebus: **milakku** 'copper' (Pali); **mleccha** 'copper' (Skt.); *kol* 'tiger' (Santali); rebus: **kol** 'metal alloy, *pan~caloha*'(Ta.)
- Turning back is an artistic device to represent rebus: kamma_ra, 'smith, artisan'**: kol kammāḷa, milakku kammāḷa** i.e., alloy-smith, or copper-smith
- **kamar** blacksmiths; **kamari** the work of a blacksmith, the money paid for blacksmith work; **nunak ato reak in kamarieda** I do the blacksmith work for so many villages (Santali) **kārmāra** = metalsmith who makes arrows etc. of metal (RV. 9.112.2: **jaratībhih oṣadhībhih parṇebhih śakunānām ka_rmāro aśmabhih dyubhih hiraṇyavantam icchatī**) kammar a, kamma_ra, kammaga_ra, **karmāra, karmakāra, kammagāra, kambāra** = one who does any business; an artisan, a mechanic; a blacksmith (Ka.)

More than 1,000 epigraphs contain the following glyphs:
śagaḍī (G.) = lathe san:gāḍo a lathe; *sa~ghād.iyo* a worker on a lathe (G.lex.) **sa~gaḍ** part of a turner's apparatus (M.); **sā~gāḍī** lathe (Tu.)(CDIAL 12859).
sanghāḍo (G.) = cutting stone, gilding; san:gatarāśū = stone cutter; san:gatarāśi = stone-cutting; san:gsāru karan.u = to stone (S.), can:katam = to scrape (Ta.), san:kad.a (Tu.), san:kaṭam = to scrape (Skt.) Lapidary.

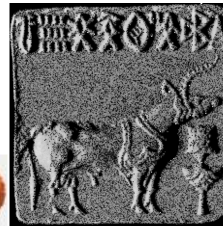
Vikalpa: jangāḍiyo 'military guard accompanying treasure' (G.)

h196b tablet portable furnace carried on shoulder

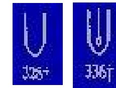
- **san:ghāḍo, saghaḍī** (G.) = firepan; **saghaḍī, śaghaḍi** = a pot for holding fire (G.)[**culā sagaḍī** portable hearth (G.)] See Seal m029 and Pectoral
- Sign 213 also occurs on punch-marked coins
- san:gaḍi = joined animals (M.)
- See Bet Dwaraka śankha seal
- kōṭu = horns (Ta.)
- **koḍ** = artisan's workshop (Kuwi)
- kamarsāla = waist band; rebus: **kamarsāla** 'workshop of smith' (Te.)





M1186 offering bowl with ladles. Composite animal: bovine body, human head, markhor horns. Kneeling adorant with horns. Horned human in a tree, ficus sprout headdress, bangles on arms (Orthography analysis after Huntington) **ḍabu** 'an iron spoon' (Santali) Rebus: **ḍab, ḍhimba, ḍhompo** 'lump (ingot?)', clot, make a lump or clot, coagulate, fuse, melt together

(Santali) **meṛgo** = rimless vessels (Santali) Rebus: **meḍ** iron (Ho.)



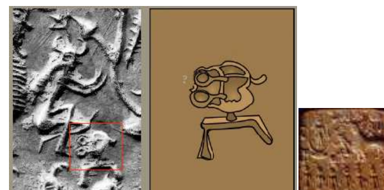
bārṇe, bāraṇe = an offering of food to a demon; a meal after fasting, a breakfast (Tu.lex.) **barada, barda, birada** = a vow (G.lex.)

bhāraṇ = to bring out from a kiln (G.) **bāraṇiyo** = one whose profession it is to sift ashes or dust in a goldsmith's workshop (G.lex.)

In the Punjab, the mixed alloys were generally called, **bharat** (5 copper, 4 zinc and 1 tin). In Bengal, an alloy called **bharan** or **toul** was created by adding some brass or zinc into pure bronze. bharata = casting metals in moulds; bharavum = to fill in; to put in; to pour into (G.lex.)

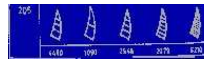
Bengali. ভরণ [bharana] n an inferior metal obtained from an alloy of coper, zinc and tin.

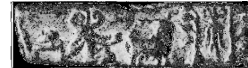
er-agu 'a bow, an obeisance' (Ka.); eraka 'metal infusion' (Tu.)
mu~he 'face' (Santali) mu~h opening or hole (in a stove for stoking (Bi.); ingot (Santali)
WPah. dhaṭu m. (also *dhaṭhu)* m. 'scarf' (CDIAL 6707) Rebus: Pa. ***dhātu*** 'mineral'



WPah. dhaṭu m. (also *dhaṭhu)* m. 'scarf' (CDIAL 6707) Pa. ***dhātu*** 'mineral' Vikalpa: **panjấr** 'ladder, stairs'(Bshk.) (CDIAL 7760); **pasra** 'smithy' (Santali) Butting a bull A branch with three pipal leaves projecting from head-dress ṭakkara = collision (Pkt.); ṭakora (K.); **ṭakaru** = butting (S.)Rebus: ṭhākur = blacksmith (Mth.)(CDIAL 5488) (CDIAL 5424)

Slide 142. Moulded tablets from Trench 11 Harappa (Kenoyer); m1186; m488C adorant with 'scarf'



Mohenjo-daro. A procession depicted on a terracotta tablet.
[After Marshall 1931, Pl. CXVIII,9]





pat leaf (Bshk.); pathar, patras (K.)(CDIAL 6455)

K. paṭṭaḍi 'smithy,forge'
maṇḍhwa, maṇḍua, maṇḍwa 'a temporary shed or booth erected on the occasion of a marriage' (Santali) maṇḍā = warehouse, workshop (Kon.lex.)

ṭakaru = butting (S.); **ṭhakkaru, ṭhakkaruḍu** = a deity; an idol; an honorific title same as ṭhākūru = a father; a religious preceptor (Te.lex.) ṭhākur blacksmith (Mth.)(CDIAL 5488).



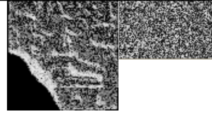
K050 body of a tiger, a human body with bangles on arm, a pig-tail, horns of a

markhor crowned by a twig.



Together with *kol* 'tiger, woman'; rebus: **kol** 'metal of five alloys, *pan~caloha'* the glyph connotes: metal alloy furnace/workshop.
kōlupuli = Bengal tiger (Te.); *kol* = tiger (Santali) *kōla* = woman (Nahali)
kol metal (Ta.) **kol** = pan~calōkam (five metals) (Ta.lex.)
WPah. dhaṭu m. (also *dhaṭhu)* m. 'scarf' (CDIAL 6707) Pa. ***dhātu*** 'mineral'
kuṭhi 'smelting furnace'; koṭe 'forged metal' (Santali)
kūtī = bunch of twigs (Skt.)
miṇḍāl 'markhor' (Tōrwālī)
Rebus: meḍ 'iron' (Mu.)
kolmo 'paddy plant' (Santali); rebus: **kolami** 'furnace, smithy' (Te.)
pon 'four' (Santali); pon 'metal' (Ta.)

Bunch of twigs, kūṭī




m1181Acolour 2222 Pict-80: Seated horned person, bristled face (with a three-leaved pipal twig on the crown); hoofed platform

Bunch of twigs head-dress of m0304 glyph (buffalo horns)

kuṭhi 'smelting furnace'; **koṭe** 'forged (metal) (Santali)

***Zizyphus mauritiana* Lam.** badari (Skt.); ilantai (Ta.)

The bunch of twigs = kūdī, kūṭī (Skt.lex.) kūdī (also written as kūṭī in manuscripts) occurs in the Atharvaveda (AV 5.19.12) and Kauśika Sūtra (Bloomsfield's ed.n, xliv. cf. Bloomsfield, *American Journal of Philology*, 11, 355; 12,416; Roth, Festgruss an Bohtlingk, 98) denotes it as a twig. This is identified as that of Badarī, the jujube tied to the body of the dead to efface their traces. (See *Vedic Index*, I, p. 177).





Bunch of twigs

m1186 (human-faced markhor), m571B (serpent-like tail, horns, body of ram, elephant trunk, hindlegs of tiger

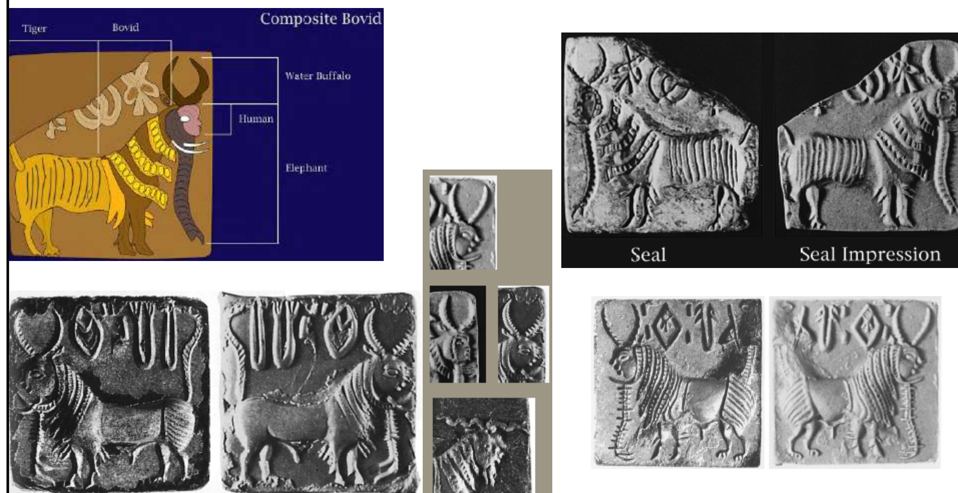



- The **bunch of twigs** = **kūdi_, kūṭī** (Skt.lex.) kūdī (also written as kūṭī in manuscripts) occurs in the Atharvaveda (AV 5.19.12) and Kauśika Sūtra (Bloomsfield's ed.n, xliv. cf. Bloomsfield, *American Journal of Philology*, 11, 355; 12,416; Roth, Festgruss an Bohtlingk, 98) denotes it as a twig. This is identified as that of Badarī, the jujube tied to the body of the dead to efface their traces. (See *Vedic Index*, I, p. 177). Rebus: kuṭhi 'smelter furnace' (Santali)
- Three-faced, horned person (with a three-leaved pipal branch on the crown with two stars on either side), wearing bangles and armlets. Two stars adorn the curved buffalo horns of the seated person **with a scarf on pigtail**.
- *WPah. dhaṭu* m. (also *dhaṭhu)* m. 'scarf' (CDIAL 6707) Rebus: Pa. ***dhātu*** 'mineral'

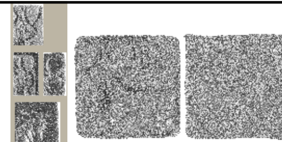
M0299 composite animal h096 composite animal m1177 composite animal

Composite animal has the body of a ram, horns of a zebu, trunk of an elephant, hindlegs of a tiger and an upraised serpent-like tail

Composition of faces analysed by Huntington



Ligatured hieroglyph: body of a ram, horns of a zebu, trunk of an elephant, hindlegs of a tiger and an upraised serpent-like tail; human face.



meḍho a ram, a sheep (G.)(CDIAL 10120); rebus: meḍ 'iron' (Ho.)

kaḍum 'neck-band, ring'; rebus: khāḍ 'trenc, firepit'

adar ḍangra 'zebu'; rebus: aduru 'native metal' (Ka.); ḍhangar 'blacksmith' (H.)



ibha 'elephant' (Skt.); rebus: ib 'iron' (Ko.)

kolo 'jackal' (Kon.); rebus: kol 'furnace, forge' (Kuwi) kol 'alloy of five metals, pancaloha' (Ta.)

moṇḍ the tail of a serpent (Santali); rebus: me~ṛhet, meḍ 'iron' (Mu.Ho.)



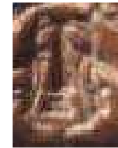
- mu~he 'face' (Santali); mu~hā me~ṛhe~t = iron smelted by the Kolhes and formed into an equilateral lump a little pointed at each of four ends (Santali) mleccha-mukha (Skt.) = milakkhu 'copper' (Pali)

koḍ 'horns'; rebus: **koḍ** = the place where artisans work (G.)

Rebus: **cuḷḷai** = potter's kiln, furnace (Ta.); cūḷai furnace, kiln, funeral pile (Ta.); cuḷḷa potter's furnace; cūḷa brick kiln (Ma.); cullī fireplace (Skt.); cullī, ullī id. (Pkt.)(CDIAL 4879; DEDR 2709). **sulgao, salgao** to light a fire; **sen:gel, sokol** fire (Santali.lex.) **hollu, holu** = fireplace (Kuwi); sod.u fireplace, stones set up as a fireplace (Mand.); ule furnace (Tu.)(DEDR 2857).
Rebus: **kuṭhi** = furnace (Santali)
Rebus: **kundār** turner (A.); **ku~dār, ku~dāri** (B.); **kundāru** (Or.); **kundau** to turn on a lathe, to carve, to chase; **kundau dhiri** = a hewn stone; **kundau murhut** = a graven image (Santali) **kunda** a turner's lathe (Skt.)(CDIAL 3295)



- An orthographic representation is provided by the following ligatured glyphs:
- (1) *cūḍā* 'bracelets', a number of other phonetic detrminatives are used in the orthography of the horned, seated person: [note the mane on the face]; (3) *cūḍa,* 'head-dress'].
- *cūḍā, cūlā, cūliyā* tiger's mane (Pkt.)(CDIAL 4883)
- *kūtī* = bunch of twigs (Skt.)
- *kundavum* = manger, a hayrick (G.)
- **sodo bodo, sodro bodro** adj. adv. rough, hairy, shoggy, hirsute, uneven; **sodo** [Persian. **sodā,** dealing] trade; traffic; merchandise; marketing; a bargain; the purchase or sale of goods; buying and selling; mercantile dealings (G.lex.) **sodagor** = a merchant, trader; sodāgor (P.B.) (Santali.lex.) The face is depicted with bristles of hair, representing a tiger's mane.



M0304 composition: yogi, human figure, elephant, tiger, rhinoceros, water buffalo. 2 ibex below platform. Analysis by Huntington: Headdress: water-buffalo horns, fan-shaped in centre; Face is human, profile faces, bovine ears; Tiger's mane(?) Torso enveloped in garment with ties around the waist. Restored view (after Huntington).

sekeseke, sekseke covered, as the arms with ornaments; **sekra** those who work in brass and bell metal; *sekra sakom* a kind of armlet of bell metal (Santali)

kamarasāla = waist-zone, waist-band, belt (Te.) **karmāraśāla** = workshop of blacksmith

(Skt.) kamar 'blacksmith' (Santali)













- **sal** *'bos gaurus' bison;* sal 'workshop' (Santali) **Vikalpa: ran:gā** 'buffalo'; **ran:ga** 'pewter or alloy of tin (ran:ku), lead (nāga) and antimony (an~jana)'(Santali)
- **kuṇḍī** = crooked buffalo horns (L.)
- **kuṇḍī** = chief of village. **kuṇḍi-a** = village headman; leader of a village (Pkt.lex.) I.e. s'ren.i jet.t.ha chief of metal-worker guild.
- **baḍhia** = a castrated boar, a hog (Santali) **baḍhi** 'a caste who work both in iron and wood' (Santali)
- **ibha** 'elephant' (Skt.); **ib** 'iron' (Santali)
- **kol** 'tiger' (Santali); **dāṭu** 'leap' (Te.); **kol** 'pan~caloha' (Ta.); **dhātu** 'mineral' (Skt.)
- **mlekh** 'antelope'(Br.); **milakkhu** 'copper' (Pali) Vikalpa: *kal aṛ* Nilgiri ibex (Ko.); *kalai* stag, buck, male black monkey (Ta.); *kalan:kompu* stag's horn (Ta.)(DEDR 1312) Rebus: **kallan** mason (Ma.); *kalla* glass beads (Ma.); *kalu* stone (Kond.a); *xal* id., boulder (Br.)(DEDR 1298). *kala* stag, buck (Ma.);
- **kaṇḍ kanka** 'rim of short-necked jar'; miner's copper fire-altar (Santali)
- **beḍa** 'fish'; **beḍa** 'hearth'
- **erā** 'claws'; **era** 'copper'; **mēd** 'body' (Kur.)(DEDR 5099); **meḍ** 'iron' (Ho.)

sodo bodo, sodro bodro adj. adv. rough, hairy, hirsute, uneven, shaggy, (Santali) *Nk. (Ch.)* sodgare fireplace (DEDR 2857) sodagor = a merchant, trader (P.B.) cūla 'tiger's mane' (Pkt.)(CDIAL 4883) cūri = bangles (H.) cūlai furnace, kiln, funeral pile (Ta.)(CDIAL 4879; DEDR 2709)	sal 'Indian Gaur, *Bos Gaurus*' (Santali) *sal* 'open a smithy, work a smithy' (Santali) kūdī, kūṭī 'bunch of twigs' (Skt.lex.) kuthi 'furnace for smelting ore' (Santali)
kamadha, kamat.ha, kamadhaka, kamadhaga, kamadhaya = a type of penance (Pkt.lex.) kampat.t.tam coinage, coin (Ta.); kammat.t.am, kammit.t.am coinage, mint (Ma.); kammat.i a coiner (Ka.)(DEDR 1236) kuntam 'haystack' (Ta.)(DEDR 1724) kundamu = a pit for receiving and preserving consecrated fire (Te.) mēt.am = goat (Ta.) mēnte 'a couple' (Tu.) med 'iron' (Mundari) krammara 'look back' (Te.) kamar 'smith' (Santali) **M0304 seal with Sarasvati hieroglyphs.**	kat.ama_ bison (Ta.)(DEDR 1114). kadiyo [Hem. Des. kad.a-i-o = Skt. sthapati a mason] a bricklayer; a mason (G.) *badhia* 'castrated boar'; *bhator* 'boar'(Santali) badhi 'those who work both in iron and wood' (Santali) kolo, kolea_ jackal (Kon.lex.) kol = pan~calo_kam (five metals) (Ta.lex.) kol furnace, forge (Kuwi) [The jumping tiger: put.i, 'to jump'; put.a, 'calcining of metals'; thus rebus of glyph connotes, put.a: a furnace for calcining minerals] ibha 'elephant' (Skt.) ib 'iron' (Ko.)(DEDR 486) **mēd** 'body' (Kur.)(DEDR 5099); med 'iron' (Ho.)

kallan mason (Ma.); kalla glass beads (Ma.); kalu stone (Kond.a); xal id., boulder (Br.)(DEDR 1298).
kala stag, buck (Ma.); kal a.r. Nilgiri ibex (Ko.); kalai stag, buck, male black monkey (Ta.); kalan:kompu stag's horn (Ta.)(DEDR 1312) (capra sibirica hemalayanus)



Text 2420
on m0304





meḍ ‘body’; rebus: meḍ ‘iron’ (Ho.)

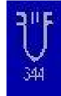
ḍato ‘claws or pincers (chelae) of crabs’; **ḍaṭom, ḍiṭom** to seize with the claws or pincers, as crabs, scorpions; ḍaṭkop = to pinch, nip (only of crabs) (Santali) Rebus: dhatu ‘mineral’ (Santali)





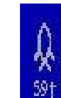
sannī, sannhī = pincers, smith’s vice (P.)

sal stake, spike, splinter, thorn, difficulty (H.); **sal** ‘workshop’ (Santali)

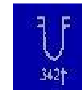


kaṇḍa kanka sal; rebus: workshop (**sal**) (with) fire-altar (of) khanaka, miner

ayo, hako 'fish'; **a~s** = scales of fish (Santali); rebus: aya = iron (G.); **ayah**, **ayas** = metal (Skt.)



kaṇḍa kanka; rebus: kaṇḍa khanaka ‘fire-altar (of) miner’



kolli = a fish (Ma.); koleji id. (Tu.)(DEDR 2139).
kōlā flying fish, exocaetus, garfish, belone (Ta.)
kōlān, **kōli** needle-fish (Ma.)(DEDR 2241).

Why this rebus reading?

An enquiry into fish and Mesopotamian Apkallu parallels…

kulullu, ‘fish-man; **kuliltu**, ‘fish-woman’; fish-garbed figure: **apkallu**, ‘sage’ (in fish-guise); Apkallu is shown in two ligatures: one with wings and one with fish (Contextual glyphs relate to tree and water).

Assyrian Assurnasirpal Relief from Nimrud, 865 B.C.(British Museum).
The person behind Assyrian Ashurnsirpal is Apkallu
[Anthony Green, Ancient Mesopotamian religious iconography, in: Jack M. Sasson (ed.), *Civilizations of the Ancient Near East*, pp. 1837-1858].





Masked as Enki, half-fish and half-priest; from a relief of Assurnasirpal II (883--859 BC) from Calah. Gypsum. Height ca. 2.5 m. After Jeremias 1929: 353, fig. 183; cf. Asko Parpola, 1984, *Deciphering the Indus Script*, Cambridge Univ. Press, Fig. 10.19, p. 190).

Lishtar notes: “The apkallu were also known as the priests of Enki…Enki’s organized world…in which wealth can be brought to the Land as a whole. ” (Lishtar, Understanding Enki and the world order). http://www.gatewaystobabylon.com/essays/essayenkiworld.html

Apkallu, priest of Enki



- Glyphs: giant ear of corn, eagle wings, antelope
- Source: Apkalu Angel, Fig. of Apkallu from Nimrud, ancient Mesopotamia (north-west palace, room Z, 875-860 BCE), Waw Allap, ISBN: AS-33 http://www.gorgiaspress.com/bookshop/pc-339-35-apkalu-angel.aspx

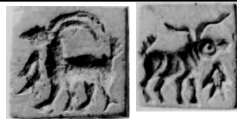
http://www.ashmol.ox.ac.uk/ash/amocats/ anet/pdf-files/ANET-26Bronze1MesV.pdf

kulullu 'fish-man' (Ancient Mesopotamia)

kol 'working in iron, blacksmith (Ta.); kollan- blacksmith (Ta.); kollan blacksmith, artificer (Ma.)(DEDR 2133) kolme = furnace (Ka.) kole.l 'temple, smithy' (Ko.); kolme smithy' (Ka.) kol = pan~calo_ha (five metals); kol metal (Ta.lex.) pan~caloha = a metallic alloy containing five metals: copper, brass, tin, lead and iron (Skt.); an alternative list of five metals: gold, silver, copper, tin (lead), and iron (dhātu; Nānārtharatnākara. 82; Man:garāja's Nighaṇṭu. 498)(Ka.) kol, kolhe, 'the koles, an aboriginal tribe if iron smelters speaking a language akin to that of Santals' (Santali)

xolā = tail (Kur.); qoli = id. (Malt.)(DEDR 2135).
kolli = a fish (Ma.); koleji id. (Tu.)(DEDR 2139). kōlā flying fish, exocaetus, garfish, belone (Ta.) kōlān, **kōli** needle-fish (Ma.)(DEDR 2241).

kōli = a stubble of jōḷa (Ka.) kōle a stub or stump of corn (Te.)(DEDR 2242). (cf. Ear of corn held in Apkallu's right hand).

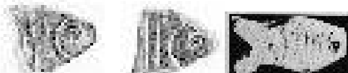


Kalibangan 37, 34

kolli 'fish' (Ma); kole.l 'smithy, temple' (Ko.) kol 'working in iron, blacksmith (Ta.)(DEDR 2133)

miṇḍāl markhor (Tor.wali)
med. iron (Ho.)
kala stag, buck (Ma.); kal a.r. Nilgiri ibex (Ko.); kalai stag, buck, male black monkey (Ta.); kalan:kompu stag's horn (Ta.)(DEDR 1312) (capra sibirica hemalayanus) Rebus kallan mason (Ma.); kalla glass beads (Ma.); kalu stone (Kond.a); xal id., boulder (Br.)(DEDR 1298).





In the corpus of epigraphs, fish signs frequency is 1241 and there are 14 objects shaped like fish, all of which were found at Harappa.

381 Fish
279 Fish (+ four gills)
216 Fish (+ inverted 'V' ligatured)
188 Fish (+ oblique cross-line)
29 Fish (+ circumgraph of 4 short strokes)
26 Fish-shaped objects



h350B, 330, h329 tablets

Ligature of distillation retort on svastika glyph



TAXILA	,,	
AYODHYA	,,	
ARJUNAYANA SIBIS KUNINDA KULUTA YAUDHEYA	,,	
SĀTAVĀHANA	COINS	

B	NAGARI FINDS	,,	
C	KAUŚĀMBĪ	UNINSCRIBED & INSCRIBED CAST COPPER COINS	
D	KADA	COPPER COINS	
E	ERAN	COPPER PUNCH-MARKED COINS	

- [Pl. 28, A, Ramnagar, Lotapur, Mamdar, Singavaran: Punch-marked coins]
- [Pl. 28, B to E: svastikā symbol on punch-marked/cast copper coins]
- [Pl.28, F: Ujjayini, copper coins with svastikā symbol]
- [Pl. 28, G to J, Taxila, Ayodhya, Arjunayana, Sibis, Kuṇinda, Kuluta, yaudheya,
- śātavāhana coins: Svastikā symbol]
- Svastika on Sarnath ayagapatta ca. 100 BCE. Beige sandstone.



Punch-marked coin symbols are a legacy of Sarasvati hieroglyphs

A	UJJAYINI	
B	,,	
C	,,	
D	TRIPURI	
E	,,	
F	AYODHYA	
G	,,	
H	ALMORA	
I	PAÑCHĀLA	
J	ARJUNĀYANA U-RĀJANYA (5-6-8)	
K	UDDEHIKA AUDUMBARA	
L	AUDUMBARA (1-2) KUNINDA (3-11)	
M	KULUTA (1-5) VRISHNI (6-7) YAUDHEYA (8-11)	
N	YAUDHEYA	
O	WESTERN KSATRAPA SĀTAVĀHANA (7-11)	
P	SĀTAVĀHANA	

TABLE 1 [Possehl, Gregory L. and Gullapalli, Praveena, 1999]
RADIOMETRIC DATES FOR MEGALITHIC IRON IN PENNINSULAR INDIA

SITE AND PERIOD	LAB NO.	CALIBRATED DATE BC/AD (1S CAL) (CALIB-3 PROGRAM)
RADIOCARBON DATES		
Hallur, Period IB, Late Neolithic	TF-586 TF-576	1415 (1310) 1134 BC 1679 (1522) 1426 BC
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	CALIBRATED DATE BC

BAMBOO PIECES

WOODEN PIECE TIED WITH A STRING

WOODEN BOWLS

PIECES OF COW HIDE WITH HOLES

BAMBOO BLOW PIPES

EARTHEN NOZZLE

FIG 13 APPARATUS FOR SMELTING OF IRON BY ASURAS

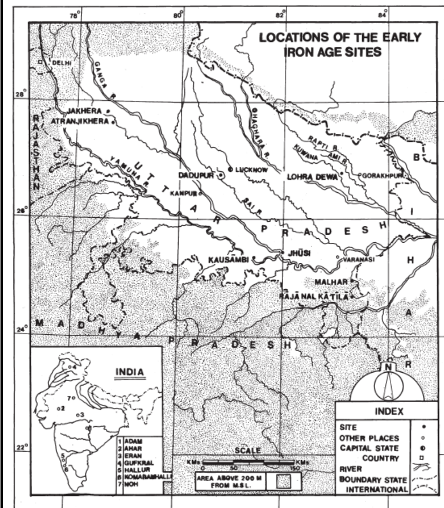
http://www.engr.mun.ca/~asharan/bihar/**iron**age/**IRON**AGE**INDIA**2.htm

"Villagers reported (as a tradition passed down from several generations), that the *agarias* (a particular tribe known for their iron smelting skills) from Robertsganj side, used to come in this area to procure iron by smelting the hematite" (Rakesh Tewari about the excavations in Malhar which yielded an iron smelter dated to ca. 18th century BCE).



FIG 14 ASURAS SMELTING IRON NEAR NETARHAT

Rakesh Tiwari, 2003, Origins of iron working in India: new evidence from the Central Ganga plain and Eastern Vindhyas, pp.536-545 ca. BCE 1800 Lohar dewa, Malhar, Raja Nal ka Tala Circular clay furnace, comprising iron slag and tuyures and other waste materials stuck with its body, exposed at Lohsanwa mound, Period II, Malhar, Dist. Chandaulihttp://www.antiquity.ac.uk/ProjGall/**tewari**/**tewari**.pdf





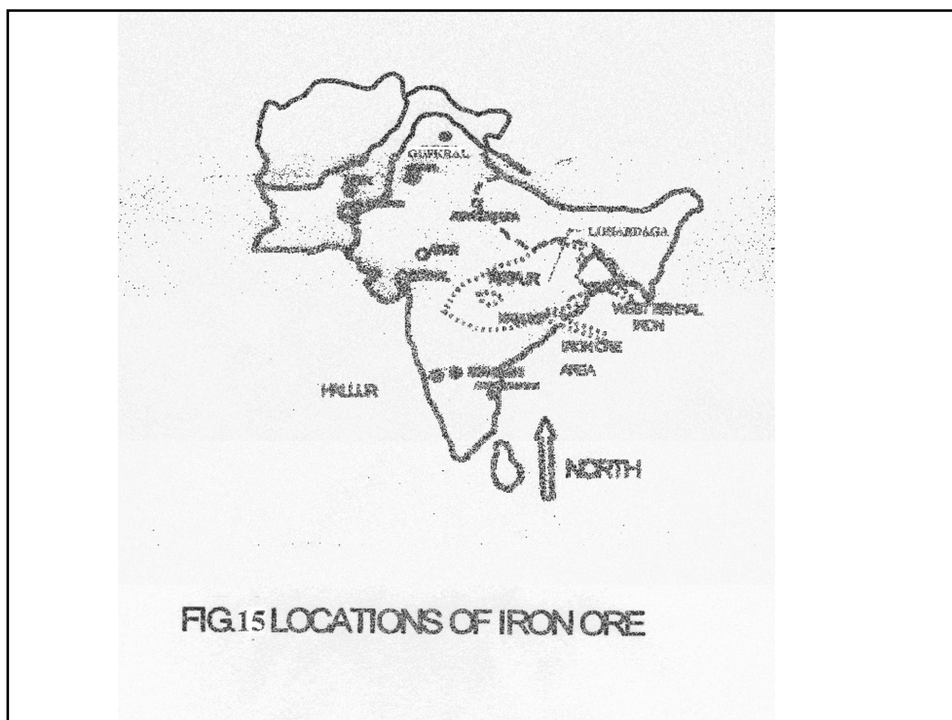


FIG.15 LOCATIONS OF IRON ORE

Distilled zinc

Early cementation processes roasted zinc ore (oxide) was mixed with copper fragments and charcoal (reducing agent) and the mixture was heated in a sealed crucible upto 1000 degrees C. The zinc vapour dissolved to yield a quality of brass. Examples of brass have been found in Lothal and Atranjikhera (6.28 to 16.2 % zinc) dated to c. 3rd and 2nd millennia BCE respectively. Carbon 14 dates (uncalibrated) for the Zawar mines of Rajasthan (40 kms. south of Udaipur) are PRL 932, 430+100 BCE and BM 2381, 380+ 50 BCE. Mining of lead zinc ores are found in the old workings at Rajpura-Dariba (375 BCE) and Rampura-Agucha (370 BCE) . At Prakashe, a Chalcolithic site (2nd millennium BCE) in Deccan, two copper objects each containing 25.86 and 17.75 percent zinc has been found. A vase found at Bhir mound (3rd cen. BCE), Taxila contained 34.34% zinc. A part of chariot in submerged Dwarka assayed 10.68% zinc (unknown date); many copper coins and many bronze images of historical periods contain upto 25% zinc. Silver used in many punch-marked coins was obtained from Zawar mines which yielded copper, zinc, lead and silver.

http://travel.sulekha.com/india/rajasthan/udaipur/travelogue/the-metallurgists-of-mewad/3804.htm

Danji Karadi in front of an ancient Jaina mandiram, Zawar; ancient zinc retorts. Zinc distillation: tiryak patana yantram

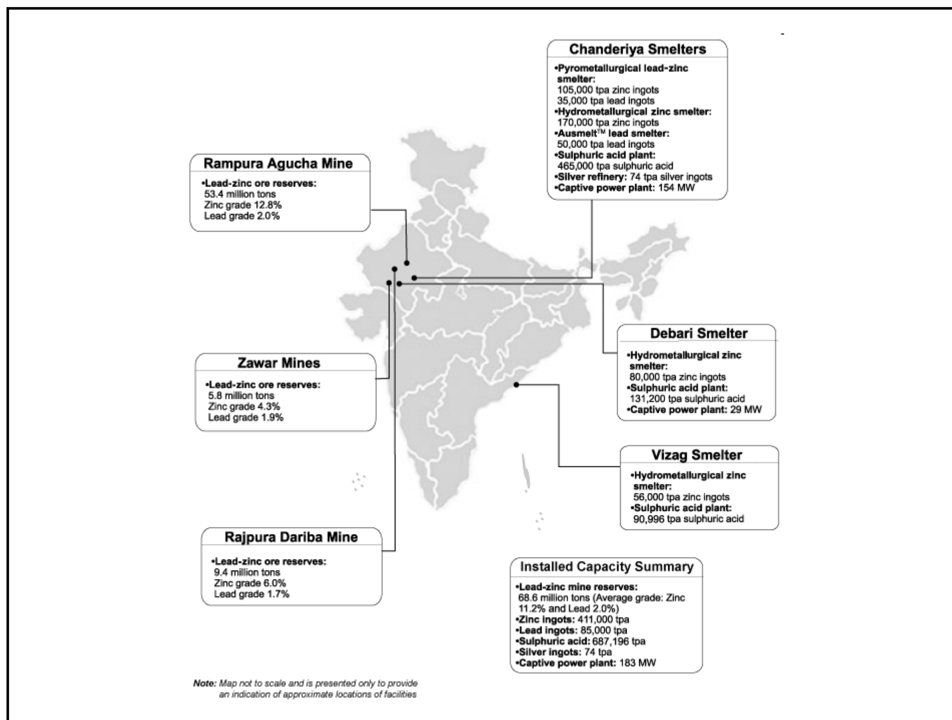












Dhokra brassware, using cire perdue technique brass = two parts copper to one part zinc

KC Aryan, 1991, Indian Folk Bronzes New Delhi http://www.purpleonion.nl/background/tribal_bronzes



ellāccollum poruḷ kuṛittanavē (Tol. Peya.1)

"All words are semantic indicators."

शब्दो नित्यो $थानित्यः

சொல்³ col , *n.* < சொல்¹-. 1. [K. *sol*, M. *col*.] Word; term; மொழி. சொல்லினாகு மென்மனார் (தொல். சொல். 158). 2. Saying, speech; பேச்சு. சான்றோர் கொடுத்தாரெனப்படுஞ் சொல் (நாலடி, 100). 3. Proverb, maxim; பழ மொழி. அல்லவை செய்தார்க் கறங் கூற்றமாமென்னும் . . . சொல் (சிலப். 20, வெண்பா.) 4. Declaration, promise, assurance; உறுதிமொழி. தோழமை யென்றவர் சொல்லிய சொல்லொரு சொல்லன்றோ (கம்பரா. குகப். 15). 5. [M. ***col***.] Praise, encomium, panegyric; புகழ். தன்சொலாற் றான் கண்டனைத்து (குறள், 387). 6. Incantation; மந்தி ரம். சொல்லுங்காற் சொல்லும் பலவுள (பு. வெ. 12, வென்றிப். 9).

பொருள் **poruḷ** , *n*. prob. பொரு–. [K. *poruḷu*, M. *poruḷ*, Tu. *porlu*.] 1. Thing, matter, entity; வஸ்து. விளங்கிய பொருள்க டம்மைப் பொய்வகை யின்றித் தேறல் (சீவக. 1436). 2. Meaning, as of a word; sense, signification; சொற்பொருள். (சூடா.) 3. Subject; subject- matter; விஷயம். எப்பொருள் யார்யார் வாய்க் கேட்பினும் (குறள், 423). 4. Essence, as of a treatise; true object or significance; உண்மைக் கருத்து. வேதங்கண்ணிய பொருளெலாம் (கம்பரா. இர ணிய. 1). 5. Object, affair; காரியம். ஒருபொருள் சொல்லுவ துடையேன் (கலித். 8). 6. Essential principle; தத்துவம். நவையறு நன்பொரு ளுரை மினோ (மணி. பதி. 87).

*எழுத்து eḻuttu Painting, picture, drawing; சித்திரம் . இன்னபலபல வெழுத்துநிலைமண்டபம் (பரிபா . 19, 53). எழுத்துவேலை eḻuttu-vēlai , n. < id. +. 1. Writing, transcribing, copying, as an employment; இராயசம். **இராயசம்** irāyacam , n. < T. vrāyasamu. 1. Business of a clerk or writer; எழுத்துவேலை. 2. Designation of a clerical officer or writer; எழுத்துவேலைக்காரன்.*

sanghāḍo (G.) = cutting stone, gilding; san:gatarāśū = stone cutter; san:gatarāśi = stone-cutting; san:gsāru karan.u = to stone (S.), can:katam = to scrape (Ta.), san:kaḍa (Tu.), san:kaṭam = to scrape (Skt.)



Ancient India linguistic area

Decoding of the writing system: all pictorial motifs (over 100) and signs (circa 400) are hieroglyphs to be read rebus in mleccha vaacas (as distinct from arya vaacas -- Manu).

The context is: miners' and smiths' repertoire (not unlike the vis'wakarma working on **utsava bera** in Swamimalai following the *cire perdue* technique of Sarasvati civilization bronzes).

Sarasvati hieroglyphs are in mleccha, mlecchita vikalpa (Vatsyayana).

Hypothesis posited: Language 'X' + Proto-Munda = Proto-mleccha (**deśa bhāṣā**) (with borrowings in Sarasvati Linguistic Area).

Corpus web album: http://sites.google.com/site/kalyan97/epigraphica-sarasvati

NAHALI, MELUHHAN, LANGUAGE 'X'

On the banks of River Narmada are found speakers of Nahali, the so-called language isolate with words from Indo-Aryan, Dravidian and Munda – which together constitute the indic language substratum of a linguistic area, ca. 3300 BCE on the banks of Rivers Sarasvati and Sindhu – a region referred to as Meluhha in Mesopotamian cuneiform records; hence the language of the inscribed objects can rightly be called Meluhhan or Mleccha, a language which Vidura and Yudhis.t.hira knew (as stated in the Great Epic, Mahābhārata).

Elsewhere in the Great Epic we read how Sahadeva, the youngest of the Pāṇḍava brothers, continued his march of conquest till he reached several islands in the sea (no doubt with the help of ships) and subjugated the Mleccha inhabitants thereof. Brahmāṇḍa 2.74.11, Brahma 13.152, Harivaṁśa 1841, Matsya 48.9, Vāyu 99.11, cf. also Viṣṇu 4.17.5, Bhāgavata 9.23.15, see Kirfel 1927: 522:

pracetasah putraśatam rājānah sarva eva te // mleccharāṣṭrādhipāh sarve udīcīm diśam āśritāh

which means, of course, not that these '100' kings conquered the 'northern countries' way beyond the Hindukuṣ or Himalayas, but that all these 100 kings, sons of pracetās (a descendant of a 'druhyu'), kings of mleccha kingdoms, are 'adjacent' (**ā**śrita) to the 'northern direction,' -- which since the Vedas and Pāṇini has signified Greater gandhāra.Kirfel, W. Das Purāṇa Pañcalakṣaṇa. Bonn : K. Schroeder 1927

Mleccha and Bharatiya languages

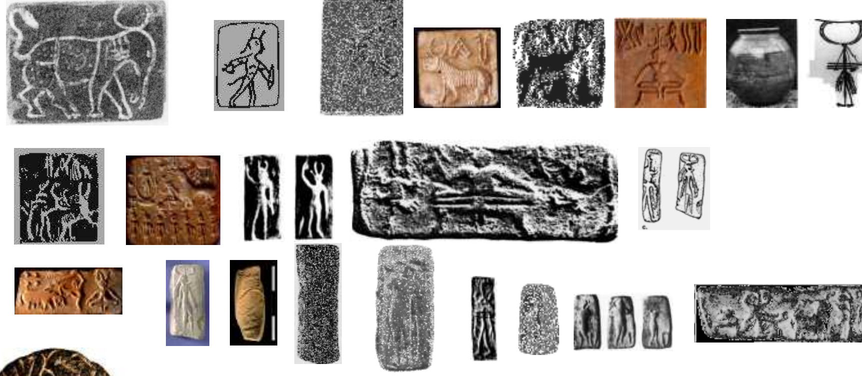
- Mleccha was substratum language of bharatiyo (casters of metal) many of whom lived in dvīpa (land between two rivers – Sindhu and Sarasvati -- or islands on Gulf of Kutch, Gulf of Khambat, Makran coast and along the Persian Gulf region of Meluhha)
- Like Nahali (Nahari > Nagari) on banks of River Tapati, mleccha is a language-composite of Indo-Aryan, Dravidian and Munda linguistic area circa 5000 years Before Present on Sarasvati-Sindhu River Basins; all proto-versions of present-day languages of Bharat are a dialectical continuum from this linguistic area (Further researches and identification of isoglosses called for).
- Indian Lexicon (http://www.scribd.com/doc/2232617/lexicon) lists cognate lexemes of 25+ ancient languages of Bharat; including 4,000 of the 5,500 etyma of Dravidian Etymological Dictionary and hundreds of Munda lexemes

Tanana mleccha

Tanana mleccha. A Jaina text, *Avasyaka Churani* notes that ivory trade was managed by tanana mleccha, who also traveled from Uttaravaha to Dakshinapatha. (Jain, Life in Ancient India as Described in the Jain Canon and Commentaries (6th century BC - 17th century AD,*1984, p. 150). Guttila Jataka (ca.4th cent.) makes reference to itinerant ivory workers/traders journeying from Varanasi to Ujjain. (*Jatakas*, Cowell, 1973, Book II, p. 172 ff.) The word, tanana in tanana mleccha may be related to: (i) tah'nai, 'engraver' mleccha; or (ii) tana, 'of (mleccha) lineage'. 1. See Kuwi. tah'nai 'to engrave' in DEDR and Bsh. then, thon, 'small axe' in CDIAL: DEDR 3146 *Go.* (Tr.) tarcana , (Mu.) tarc- to scrape; (Ma.) tarsk- id., plane; (D.) task-, (Mu.) tarsk-/tarisk- to level, scrape (*Voc.*1670).

koṭ ‘horn’; *Ko. kṛ (obl. kṭ-)(DEDR 2200) kod. ‘workshop’ (G.)* meḍ ‘body’ (Santali) Rebus: **koṭe meṛed** = forged iron (Mu.) meḍ ‘iron’ (Ho.) **dul meṛed**, cast iron (Mu.) ḍaulā ‘upper arm’ (IL 4982) dāula ‘a gold or silver washer’ (P.) māḷa a sort of pavilion (Pali); māḷikai = temple (Ta.)(DEDR 4796). māḍa = pavilion (Te.)

Rebus: maṇḍā= workshop (Kon.) கொட்டுக்கன்னார் koṭṭu-k-kaṉṉār , *n*. < கொட்டு² +. Braziers who work by beating plates into shape and not by casting; செம் படிக்குங் கன்னார். (W.)





Stamp seal, standing male figure between two horned quadrupeds back to back and head to end
http://www.nb.no/baser/schoyen/5/5.6/#2411 MS on speckled dark-olive steatite or chlorite, North Syria/Iraq/Iran, 5th-4th millennium BC, 1 circular stamp seal, diam. 8,4x1,3 cm, pierced through.*Provenance:* 1. Erlenmeyer Collection, Basel (before 1958-1981); 2. The Erlenmeyer Foundation, Basel (1981-1997); 3. Sotheby's 12.6.1997:10.
m0571,Pict-89, m0588, Text 2360,m1175, m1181, Padri painted jar, Pict-103, m1186, m1224, md013, h95-2487, slide242, slide207, h175, h178, h363, h714, Pict-90, m0488 bel [Hem. Des. ba-i-lī fr. Skt. balīvarda = a bull] a bull; a bullock; an ox (G.lex.) Rebus: bali bica ‘iron sand ore’ (Mu.)

***Ta.* kōṭu (*in cpds.* kōṭṭu-)** horn; koṭ ‘workshop’ (Kuwi) Rebus: **koṭe meṛed** = forged iron, in contrast to **dul meṛed**, cast iron (Mundari.lex.)

- ***கோடு kōṭu* : (page 1180)**
- ***நடுநிலை நீங்குகை. கோடிறீக் கூற் றம் (நாலடி, 5). 3. [K. kōḍu.] Tusk; யானை பன்றிகளின் தந்தம். மத்த யானையின் கோடும் (தேவா. 39, 1). 4. Horn; விலங்கின் கொம்பு. கோட்டிடை யாடினை கூத்து (திவ். இயற். திருவிருத். 21).***
- ***Ta. kōṭu (in cpds. kōṭṭu-) horn, tusk, branch of tree, cluster, bunch, coil of hair, line, diagram, bank of stream or pool; kuvaṭu branch of a tree; kōṭṭāṉ, kōṭṭuvāṉ rock horned-owl (cf. 1657 Ta. kuṭiñai). Ko. kṛ (obl. kṭ-) horns (one horn is kob), half of hair on each side of parting, side in game, log, section of bamboo used as fuel, line marked out. To. kwṛ (obl. kwṭ-) horn, branch, path across stream in thicket. Ka. kōḍu horn, tusk, branch of a tree; kōr horn. Tu. kōḍů, kōḍu horn. Te. kōḍu rivulet, branch of a river. Pa. kōḍ (pl. kōḍul) horn*** (DEDR 2200)

- ***Tu.* koḍapuni** to forge, hammer; **koḍapāvuni** to weld, forge together; ***Kuwi*** (Isr.) **koṭoli** mallet; Pali **koṭṭeti** to beat, smash, pound; Nahali **koṭṭo-** to pound, beat. (DEDR 2063) Pa. *koṭṭēti* ‘hews, breaks, crushes’, Pk. *koṭṭēi*; Kho. (Lor.) *kotik* (= —*ṭ*—?) ‘to crush (testicles to castrate)’; Ku. *koṭyūṇo* ‘to dig up with a hoe’; K. *kuṭun* ‘to pound, crush’; S. *kuṭaṇu* ‘to pound, bruise’; **kuṭṭáyati** ‘crushes, grinds’ AVPariś., ‘pounds’ VarBr̥S. 2. ***kōṭṭayati.** [√kuṭṭ] 1. Pk. *kuṭṭēi* ‘beats, pounds’; Gy. arm. eur. *kur*— ‘to beat’, SEeur. *kuṛ*— JGLS new ser. iv 293; Wg. (Lumsden); S. *kuṭaṇu* ‘to pound, bruise’; L. *kuṭṭaṇ* ‘to beat, pound, ram’, P. *kuṭṭṇā*, WPah. pāḍ. *koṭaṇ*, bhad. bhal. *kuṭṇū*, khaś. *kuṭṭnū*, Ku. *kuṭṇo*, N. *kuṭnu*; A. *kuṭiba* ‘to cut into small pieces, gnaw, punctuate’; B. *kuṭā* ‘to beat, pound, cut up for cooking’; Or. *kuṭibā* ‘to beat, pound’ (CDIAL 3241)

dul meṛed, cast iron (Mu.) **dol** = likeness, picture, form (Santali) [e.g., two tigers, two bulls, duplicated glyphs]





meṛed, me~ṛed iron; **enga meṛed** soft iron; **sanḍi meṛed** hard iron; **ispāt meṛed** steel; **dul meṛed** cast iron; **i meṛed** rusty iron, also the iron of which weights are cast; bicamer.ed iron extracted from stone ore; **bali meṛed** iron extracted from sand ore; **meṛed-bica** = iron stone ore, in contrast to **bali-bica**, iron sand ore (Mu.lex.)

h180, k065, m0296, m0306, m0308, m0477, m0480, m0492, m1367, m1431, m1534,

Gadd18, h95-2524, h2000-4483

12 reduplicated glyphs: reduplication connotes dul 'likeness'; rebus: 'cast (metal)' to prefix the following lexemes which explain the semantics of each reduplicated glyph e.g., **dul meṛed**, cast iron (Mu.) **dol** = likeness, picture, form (Santali)

kuṭila 'bent'; rebus: 'bronze (8 parts copper, 2 parts tin)'
lo'ficus'; rebus: metal
baṭa 'pot' 'quail'; rebus: 'furnace'
khaṇḍ 'division'; rebus: kaṇḍ 'furnace'
kolmo 'seedling'; rebus: kolami 'smithy'
ḍhālako Sign 274; rebus: 'a large metal ingot (G.)'
beḍa 'fish'; rebus: 'hearth'
erako nave; rebus: 'molten cast (copper)'
kuṭi 'eyebrow'; rebus: 'smelter'
meḍ 'body'; rebus: 'iron'
baroṭi 'twelve'; rebus: bharata 'a factitious alloy of copper, pewter, tin (M.)'



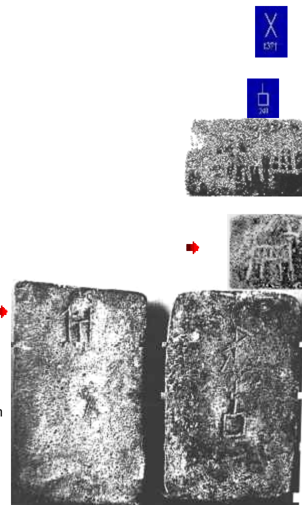


(Some field-symbols are also reduplicated: e.g. two antelopes (mēṭam), two heifers (damṛa), two bulls (bali); rebus: meḍ 'iron'; tam(b)ra 'copper'; bali 'iron sand ore').

Tin ingots (Sarasvati *rosetta stones*) found in a ship-wreck, Haifa incised with Sarasvati hieroglyphs

- **ran:ku** = tin (Santali)

- *ran:ku* = liquid measure (Santali)
- *ran:ku* a species of deer; *ran:kuka* (Skt.)(CDIAL 10559). See middle glyph on copper plates m0522 & m0516
- *dāṭu* = cross (Te.); dhatu = mineral (Santali)
- H. *dhāṃā* 'to send out, pour out, cast (metal)' (CDIAL 6771).



[Copper tablet; side B perhaps is a graphemic representation of an antelope; note the ligatured tail comparable to the tail on m273, b012 and k037]

- [New evidence for sources of and trade in bronze age tin, in: Alan D. Franklin, Jacqueline S. Olin, and Theodore A. Wertime, *The Search for Ancient Tin*, 1977, Seminar organized by Theodore A. Wertime and held at the Smithsonian Institution and the National Bureau of Standards, Washington, D.C., March 14-15, 1977].

Akkadian. Cylinder seal Impression. Inscription records that it belongs to 'S'u-ilis'u, Meluhha interpreter', i.e., translator of the Meluhhan language (EME.BAL.ME.LUH.HA.KI) The Meluhhan being introduced carries an goat on his arm. Musee du Louvre. Ao 22 310, Collection De Clercq3rd millennium BCE. The Meluhhan is accompanied by a lady carrying a kaman.d.alu. Since he needed an interpreter, Meluhhan did not speak Akkadian. Antelope carried by the Meluhhan is a hieroglyph: mlekh 'goat' (Br.); mr..eka (Te.); me_t.am (Ta.); mes.am (Skt.) Thus, the goat conveys the message that the carrier is a Meluhha speaker. A phonetic determinant. Musee du Louvre. Ao 22 310, Collection De Clercq. Mr..eka, mlekh 'goat'; rebus: melukkha

***Br.* mē<u>lh</u> 'goat'. Te. mṟeka (DEDR 5087)**
Hieroglyph, phonetic determinant of 'meluhha' (mleccha)

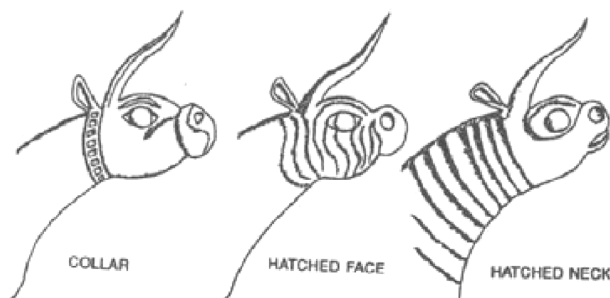


One-horned heifer + standard device	1159
Shor-horned bull	95 +2 (in opposition)
Zebu or Bra_hman.i bull	54
Buffalo	14
Elephant	55 + 1 (horned)
Tiger (including tiger looking back)	16 + 5 (horned)
Boar	39 + 1 (in opposition)
Goat-antelope	36 + 1 (flanking a tree)
Ox-antelope	26
Hare	10 +1 (object shaped like hare)
Ligatured animal	41
Alligator	49
Fish	14 (objects shaped like fish); fish also a high-frequency sign
Cart frame + wheels	26
Sprout (or, seedling stylized)	800
Water-carrier	220
Scorpion/rat	106
Claws (of crab)	130 + 90 (shaped like pincers)
Arrow (spear)	227
Rimless, wide-mouthed pot	350

Frog	1
Serpent	10
Tree	34 + 1 (leaves)
Dotted circle	67
Svastika	23
Endless-knot	4
Rimmed narrow-necked jar	1395
Frog	1
Serpent	10
Tree	34 + 1 (leaves)
Svastika	23
Endless-knot	4
Double-axe	14 (inscribed objects shaped like axe)
Standard device	1395
Fish signs	1241
Spoked wheel (nave)	203
Leaf signs	100

Rings on neck of one-horned heifer. One horn is **koḍ** Rings on neck are: **koṭiyum**.

Rebus: **koṭ** 'artisan's workshop'.(Kuwi) **koḍ** = place where artisans work (G.lex.)





m1203A



m1203B

- Note the gimlet precisely indicated on the standard device on m1203A, the sharp point is drilling into a disc-shaped bead].
- **san:ghāḍo, saghaḍī (G.)** = firepan; **saghaḍī, śaghaḍi** = a pot for holding fire (G.)[cula_ sagaḍi_ portable hearth (G.)] **aguḍe** = brazier (Tu.)
- **san:gaḍa**, 'lathe, portable furnace'; rebus: battle; **jangaḍ iyo** 'military guard who accompanies treasure into the treasury'; **san:ghāḍiyo**, a worker on a lathe (G.) The dotted circles on the bottom portion of the device connote ghangar ghongor; rebus: kangar 'portable furnace'.

வேதிதம் vētitam
, *n*. < *vēdhita*. (யாழ். அக.) 1. Perforating, drilling; துளைக்கை. 2. Tube; துளையுடைப்பொருள். வேதை[3] vētai , *n*. < *vēdha*. 1. Drilling, boring;

துளைக்கை.

- M1393, m1394, m1395B, m1405B (tiger, rhinoceros – kol, badhia), m1431B (one-horned heifer, elephant, rhinoceros; alligator+fish, bird – damṛa, ibha, badhia, mangar, kolli, baṭ a), m1431E (Drilling, goats+tree) -- kuṭi 'tree'; mlekh 'goat'; rebus: milakkhu 'copper' (Pa.)













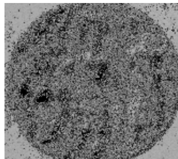
Pict-49 Uncertain animal with dotted circles on its body.

Obverse of steatite Dilmun stamp seal from Failaka Island (c. 2000 BCE). A human figure and a variety of animals – two antelopes one with its head looking backward; possibly a scorpion at the feet of the human figure. A dotted circle is seen above one antelope and a vase in between the antelope and the human figure. Kuwait National Museum. French Archaeological Expedition in Kuwait. Several inscriptions at Failaka mention the Dilmunite god Enzak and his temple or Mesopotamian deities. [Remi Boucharlat, Archaeology and Artifacts of the Arabian Peninsula, in: Jack M. Sasson (ed.), *Civilizations of the Ancient Near East*, pp. 1335-1353].



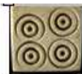


me~ṛhe~t = iron (Ore) [Rebus: me~t = the eye (Santali) , orthography: dotted circle.] meḍa 'neck' (Te.) mēṭam = goat (Ta) ḍhāḷ = a slope; the inclination of a plane (G.) Rebus: : ḍhāḷako = a large metal ingot (G.)
piserā = a small deer brown above and black below (H.)(CDIAL 8365). Rebus: pasra = a smithy (Santali) blacksmith's forge (Sad.) ḍhan:ga = tall, long shanked; *maran: ḍhan:gi aimai kanae* = she is a big tall woman (Santali.lex.) Rebus: d.han:gar 'blacksmith'



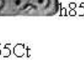
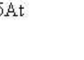
urseal8Seal; BM 118704; U. 6020; Gadd PBA 18 (1932), pp. 9-10, pl. II, no.8; two figures carry between them a vase, and one presents a goat-like animal (not an antelope) which he holds by the neck.

Dotted circle hieroglyph (1)





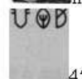
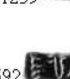






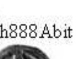








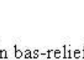
























Slide 203 (Kenoyer, 2002). Steatite button seal Fired steatite button seal with four concentric circle designs from the Trench 54 area (H2000-4432/2174-3)

Kalibangan057 Kalibangan058 h855At h855Bt h855Ct

m1259 m1260 h974Ait h974Bit h974Cit

4592 h978Ait h978Bit h978Cit

5412 h888Abit 4466 h889Abit 5477

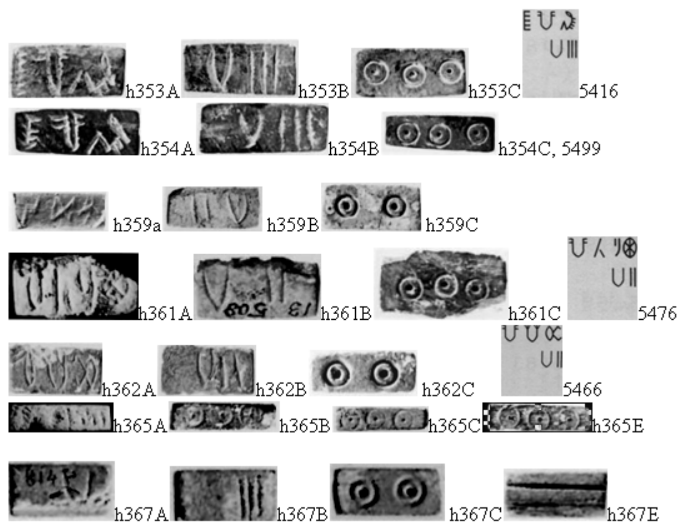
h832At h832Bt Tablet in bas-relief h638

h352A h352B h352C 4575 Pict-120: One or more dotted circles. [54 out of 67 objects on which this glyph occurs, are miniature tablets]
The text on top line occurs mainly on miniature tablets of Harappa over 46 times.

Dotted circle hieroglyph (2)



Ropar 1,Text 9021



Dotted circle hieroglyph (3) h128







After Vats, Pl.CXIX,.No.6 An ivory comb fragment with one preserved tooth and ornamented with double incised circles (3.8 in. long).

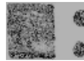
Kalibangan, Ivory comb with three dotted circles; Kalibangan, Period II; Thapar 1979, Pl.XXVII, in: *Ancient Cities of the Indus.*



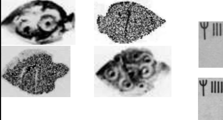


Ivory rod, ivory plaque with dotted circles. Mohenjodaro. [Musee National De Arts Asiatiques Guimet, 1988-1989, Les cites oubliees de l'Indus Archeologie du Pakistan.]

h1017ivorystick



Ivory comb with Mountain Tulip motif and dotted circles. TA 1649 Tell Abraq. [D.T. Potts, South and Central Asian elements at Tell Abraq (Emirate of Umm al-Qaiwain, United Arab Emirates), c. 2200 BC—AD 400, in Asko Parpola and Petteri Koskikallio, *South Asian Archaeology 1993*: , pp. 615-666] h337, h338 Texts 4417, 4426 (Dotted circles on leaf-shaped tablets) Tell Abraq comb and axe with epigraph After Fig. 7Holly Pittman, 1984, *Art of the Bronze Age: Southeastern Iran, Western Central Asia, and the Indus Valley*, New York, The Metropolitan Museum of Art, pp. 29-30].



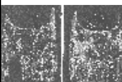
Wild tulip motif. A motif that occurs on southeast Iranian cylinder seals and on Persian Gulf seals. 1st row: Bactrian artifacts; 2nd row: a comb from the Gulf area and late trans-Elamite seals [After Marie-Helene Pottier, 1984, *Materiel funeraire de la Bactriane meridionale de l'age du bronze*, Recherche sur les Civilizations, Memoire 36, Paris, fig. 21; Sarianidi, V.I., 1986, Le complexe culturel de Togolok 21 en Margiane, *Arts Asiatiques 41*: fig. 6,21; Potts, 1994, fig. 53,8; Amiet, 1986, fig. 132].

The ivory comb found at Tell Abraq measures 11 X 8.2 X .4 cm. Both sides of the comb bear identical, incised decoration in the form of two long-stemmed flowers with crenate or dentate leaves, flanking three dotted circles arranged in a triangular pattern. Bone and ivory combs with dotted-circle decoration are well-known in the Harappan area (e.g. at Chanhu-daro and Mohenjo-daro), but none of the Harappan combs bear the distinctive floral motif of the Tell Abraq comb. These flowers are identified as tulips, perhaps Mountain tulip or Boeotian tulip (both of which grow in Afghanistan) which have an undulate leaf. There is a possibility that the comb is an import from Bactria, perhaps transmitted through Meluhha to the Oman Peninsula site of Tell Abraq.

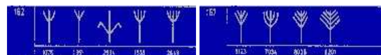
Harappan weight TA 1356 from Tell Abraq. C. 22nd cent. BCE. Banded chert or flint weight 54.06 g. This is approx. 4 times the unit Harappan weight of 13.63 g.

Seal impression from Harappa (Kenoyer, 1998); a woman is carrying a three-petalled flower

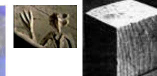
Kenoyer Slide 124 Inscribed Ravi sherd (1998 find at Harappa: Kenoyer and Meadow); the sherd contains the same sign (ca. 3300 BCE). The sign on this potsherd (with five petals as in *tabernae montana,* ***tagaraka***) is stylized as Sign 162 (with three prongs) and Sign 165 (with five petals). Sign 167 shows five petals (and variants show many more branches). The sign also is ligatured to form other signs:



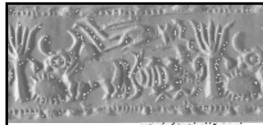








A soft-stone flask, 6 cm. tall, from Bactria (northern Afghanistan) showing a winged female deity (?) flanked by two flowers similar to those shown on the comb from Tell Abraq (After Pottier, M.H., 1984, *Materiel funeraire e la Bactriane meridionale de l'Age du Bronze*, Paris, Editions Recherche sur les Civilisations: plate 20.150)





Ur cylinder seal impression (cut down into Ur III mausolea from Larsa level; U. 16220), *Iraq.* BM 122947; enstatite; Legrain, 1951, No. 632; Collon, 1987, Fig. 611. Source: Editors of Time-Life Books, 1994, *Ancient India: Land of Mystery*, p. 12. *t.agara* = *taberna montana* (Skt.) This is a flower, *tagaraka*, used as a hair-fragrance (Skt.) and hence is also depicted on a bonecomb.





Inscribed Ravi sherd (1998 find at Harappa: Kenoyer and Meadow); the sherd contains the same sign (ca. 3300 BCE).



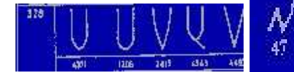
•Bone comb with Mountain Tulip motif and dotted circles. TA 1649 Tell Abraq, United Arab Emirates.

- Sign 169 **takaram** tin, white lead, metal sheet, coated with tin (Ta.); tin, tinned iron plate (Ma.); tagarm tin (Ko.); tagara, tamara, tavara id. (Ka.) tamaru, tamara, tavara id. (Ta.): tagaramu, tamaramu, tavaramu id. (Te**.); ṭagromi** tin metal, alloy (Kuwi); tamara id. (Skt.)(DEDR 3001). trapu tin (AV.); tipu (Pali); tau, taua lead (Pkt.); tu~_ tin (P.); ṭau zinc, pewter (Or.); **tarūaum** lead (OG.); tarvu~ (G.); tumba lead (Si.)(CDIAL 5992).
- *ran:ga ron:ga, ran:ga con:ga* = thorny, spikey, armed with thorns; edel dare ran:ga con:ga dareka = this cotton tree grows with spikes on it (Santali) **ran:ga, ran:** pewter is an alloy of tin lead and antimony (an~jana) (Santali).
- Adar ḍangra 'zebu'; rebus: aduru 'native metal' (Ka.); ḍhangar 'blacksmith' (H.)

Dotted circle, rebus: pasra 'smithy'; kaṇḍ 'fire-altar'

- **pāslo = a nugget of gold or silver having the form of a die (G.)** Rebus: pasra 'smithy' (Santali)
- **kandhi** = a lump, a piece (Santali.lex.) [The dotted circle thus connotes an ingot taken out of a **kaṇḍ**, furnace]. kāndavika = a baker; kandu = an iron plate or pan for baking cakes etc. (Ka.lex.)
- kaṇḍ = altar, furnace (Santali) लोहकारकन्दुः f. a blacksmith's smelting furnace (Grierson Kashmiri lex.) payen-kōda पयन् -कोँद । परिपाककन्दुः f. a kiln (a potter's, a lime-kiln, and brick-kiln, or the like); a furnace (for smelting) This yajn~a kuṇḍam can be denoted rebus, by perforated beads (**kandi**) or on ivory (**khaṇḍ):**
- **kandi** (pl. -l) beads, necklace (Pa.); kanti (pl. -l) bead, (pl.) necklace; kandit. bead (Ga.)(DEDR 1215). The three stringed beads depicted on the pictograph may perhaps be treated as a phonetic determinant of the substantive, the rimmed jar, the khaṇḍa kanka. khaṇḍa, xanro, sword or large sacrificial knife. **kandil, kandi_l** = a globe of glass, a lantern (Ka.lex.)
- jaṇḍ khaṇḍ = ivory (Jat.ki) khaṇḍi_ = ivory in rough (Jat.ki_); gaṭī = piece of elephant's tusk (S.) [This semant. may explain why the dotted circle -- i.e., kandi, 'beads' -- is often depicted on ivory objects, such as ivory combs]. See also: khaṇḍiyo [cf. khaṇḍaṇī a tribute] tributary; paying a tribute to a superior king (G.lex.) [Note glyph of a kneeling adorant]
- Glyph: *khan:ghar, ghan:ghar, ghan:ghar gon:ghor* 'full of holes' (Santali)
- Substantive: *kan:gar* 'portable furnace' (K.)

K. *panzur* m. ‘skeleton’; Or. *pañjarā* ‘skeleton, ribs (CDIAL 7685)
Rebus: pasra ‘smithy’ (Santali)



baṭa = a kind of iron (G .) **baṭa** = rimless pot (Kannada)
meḍ iron (Ho.) **meṛgo** = rimless vessels (Santali)

baraḍo = spine; backbone; the back; baraḍo thābaḍavo = lit. to strike on the backbone or back; hence, to encourage; baraḍo bhāre thato = lit. to have a painful backbone, i.e. to do something which will call for a severe beating (G.lex.) baraḍ, baraḍu = barren, childless; baraṇṭu = leanness (Tu.lex.) *maṇuk.o* a single vertebra of the back (G.)

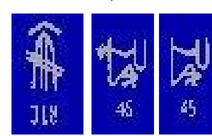
bhāraṇ = to bring out from a kiln (G.) bāraṇiyo = one whose profession it is to sift ashes or dust in a goldsmith’s workshop (G.lex.) **baran, bharat** (5 copper, 4 zinc and 1 tin)(P.B.)

bharaḍo a devotee of S’iva; a man of the *bharaḍā* caste in the bra_hman.as (G.) baraṛ = name of a caste of jat-around Bhaṭiṇḍa; bararaṇḍā melā = a special fair held in spring (P.lex.) bharāḍ = a religious service or entertainment performed by a bharāḍi_; consisting of singing the praises of some idol or god with playing on the d.aur (drum) and dancing; an order of aṭharā akhād.e = 18 gosāyi_ group; bharād. and bhāratī are two of the 18 orders of gosāyi_ (M.lex.)

bharaḍo = cross-beam in the roof of a house (G.lex.) bha_rat.iyum, bhārvaṭiyo, bhāroṭiyo = a beam (G.lex.) bāri = bamboo splits fastened lengthwise to the rafters of a roof from both sides (Tu.lex.) bārapaṭṭe = chief beam lying on pillars (Te.lex.) **bharaṇum** a piece in architecture; placed at the top of a pillar to support a beam (G.)

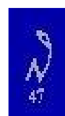
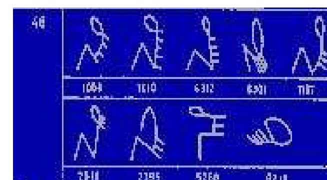
Kalibangan 100 potsherd. Kalibangan (048) “The seated person is facing right (in the original seal), leaning forward. He has a large head and a massive jaw jutting forward. The complete ribcage is shown in clear detail with almost all the ribs in position, curving naturalistically on either side of the backbone. The deity appears to be holding a ladle (?) in his right hand. His knees are drawn up and he seems to be squatting on his haunches. The details are clearly visible in the highly enlarged photograph of the seal published in Pl. 275: Omananda Saraswati 1975. *Ancient Seals of Haryana* (in Hindi). Rohtak.” (I. Mahadevan, 'Murukan' in the Indus Script, *The Journal of the Institute of Asian Studies*, March 1999).






Sanur, Tamilnadu Megalithic pottery

- B.B. Lal, 1960. From Megalithic to the Harappa: Tracing back the graffiti on pottery. *Ancient India*, No.16, pp.4-24.
- Sign 47 and variants
- Kalibangan048

Composites, pictorial nature of the writing system

san:gaḍi = joined animals (M.) Rebus: sanghāḍo (G.) = cutting stone, gilding; san:gatarāśū = stone cutter; san:gatarāśi = stone-cutting; san:gsāru karan.u = to stone (S.), can:katam = to scrape (Ta.), san:kaḍa (Tu.), san:kaṭam = to scrape (Skt.)

- M1169a, m1170, m1171





K043 3 bovid heads on one body
m0298 2 bovine heads on one body + fish (sign?)
m417 six heads from a core





H006 composite bovid (imagined?)
With one horn, pannier, neck rings, standard device in front
Standard device variants





Composition

- m1175a, m1176, m1177

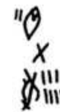


Fish glyph on gold pendant

kana, kanac = corner (Santali); kan~cu = bronze (Te.) sal ‘splinter’; sal ‘workshop’ (Santali) dāṭu ‘cross’ (Te.); dhātu = mineral (Skt.); ?ea ‘seven’; rebus: ?eh-ku ‘steel’; kolli ‘fish’; rebus: kol ‘working in iron’

The gold pendant is made from a hollow cylinder with soldered ends and perforated point. Museum No. MM 1374.50.271; Marshall 1931: 521, pl. CLI, B3. [After Fig. 4.17a, b in: JM Kenoyer, 1998, p. 196].





Priest, wearing an embroidered shawl, with right-shoulder bare and a neatly-trimmed beard

Warrior carrying weapons, Maris, Mesopotamia which had trade contacts with Sarasvati Civilization

Harappa. Copper/bronze dagger with inscription

Copper from the mines in Rajasthan; was alloyed with tin and arsenic, to yield bronze and brass metals



ṭhakkura = idol, deity, title (Skt.); chief man of a village (Pkt.); ṭhākur blacksmith (Mth.)(CDIAL 5488) kasīdo (Persian kaśīdan to draw) embroidery; a piece of brick or tile burnt in fire and turned hard (G.) kasaṭiyo a pawnbroker, a money-lender (G.)



tha [ṭha]

See glyph for syllable ṭha in Brahmi



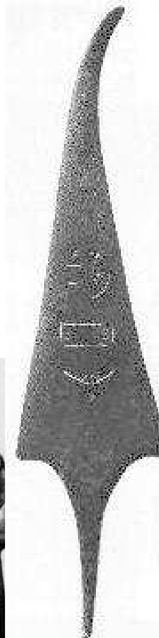


Figure 20: Positional Order of the "Fish" Signs

(Fig. 20 in Michael Pieter Kovink, 2008, *The Indus script -- a positional-statistical approach*, USA, Gilund Press, ISBN 978-0-6151-8239-1showing varieties of fish signs and positional sequencing on epigraphs.)

M1168 2360

- Fish hieroglyphs
- **badhoṛ** 'a species of fish with many bones' (Santali) **badhoria** 'expert in working in wood'(Santali)
- **beḍa hako** 'fish' (Santali); **beḍa** 'either of the sides of a hearth' (G.)
- **keṇṭa** 'fish'; **ke~ṛe~** brass or bell-metal
- **ayo, hako** 'fish'; **a~s** = scales of fish (Santali); rebus: aya = iron (G.); **ayah**, **ayas** = metal (Skt.)
- **kolli** = a kind of fish (Ma.); koleji (Tu.)(DEDR 2139). gullo (Tu.), golla-dondu (Te.), **kōlān** = needle-fish (Ma.) kōla (Ta.)kol 'pancaloha' (Ta.)
- **ḍhāl.** = a slope; the inclination of a plane; **ḍhālako** = a large metal ingot (G.)
- **cūḷi** = scales of fish (Ma.)(DEDR 2740). **cūḷai** = kiln; **cuḷḷai** = furnace (Ta.)

Sign 70 A short stroke within the body of the fish) affixed to the basic 'fish' pictograph.
sal stake, spike, splinter, thorn, difficulty (H.); **sal** 'workshop' (Santali)

gaṇḍe = a fish (Te.lex.) **gaṇḍa** set of four (Santali) kaṇḍa 'fire-altar'

ḍato 'claws or pincers (chelae) of crabs'; **ḍaṭom, ḍiṭom** to seize with the claws or pincers, as crabs, scorpions; ḍaṭkop = to pinch, nip (only of crabs) (Santali) **^** **ḍāṭo, dāṭo** a plug, a cork, a stopple (G.); **dhātu** 'mineral' (Vedic); a mineral, metal (Santali)

Fish and numerals as hieroglyphs for metalwork H97 tablet, seven robed figures



kulullu 'fish-man'; apkallu 'sage' (Akkadian) One of seven sages. There is an Indic tradition of seven sages called saptarishi.

The word ap-kallu has parallels in indic languages (semantics, 'water', 'fish'):

Aapah 'waters'.

kolli, koleji means 'fish'; kōlā 'flying fish' (Ta.); rebus: kolme 'smithy' (Ka.) kol 'working in iron, blacksmith (Ta.)(DEDR 2133)

Fish is a frequently used glyph on Sarasvati hieroglyphs and is also found in many ANE inscribed objects.

The fish glyphs and associated numerals are hieroglyphs (mleccha, indic language family) related to bronze age trade between Meluhha and ANE.

ban:gala = kumpaṭi = an:gāra śakaṭī = a chafing dish a portable stove a goldsmith's portable furnace (Te.lex.)

bahulā= Pleiades (Skt.) – Seven stars. Bagaḷā 'name of a female divinity' (Te.)
Bagalo 'Arabian merchant vessel'(G.)

- midh ‘one’ (Savara)
- miṇḍ ‘ram’ (Pktl.); me~ḍha (G.) cf. mēṣa = goat (Skt.lex.) miṇḍāl markhor (Tor.wali)
- mēṛsa = v.a. toss, kick with the foot, hit with the tail (Santali.lex.)
- me~r.he~t iron; ispat m. = steel; dul m. = cast iron; kolhe m. iron manufactured by the Kolhes (Santali); meṛed (Mun.d.ari); meḍ (Ho.)(Santali.lex.Bodding)

- bar, barea = two
- **barī** = blacksmith, artisan (Ash.)(CDIAL 9464).

- tebra ‘three’ (Santali); ta(m)bra ‘copper’; tibira ‘merchant’ (Akkadian)
- kolom ‘three’ (Mu.); kolami ‘furnace, smithy’ (Te.)

- gaṇḍa ‘set of four’ (Santali)
- gaṇḍe ‘carp fish’ (Ka.); rebus: kaṇḍ ‘fire-altar, furnace’

- bhaṭa ‘six’; bhaṭa ‘furnace’

- eae ‘seven’ (Santali); rebus: eh-ku ’steel’ (Ta.)

- **lo** = nine (now often heard)(Santali); **lo** (desi); noe (B.)(Santali.lex.Bodding)
- lo~u, lō, lōh, luhā, lohā (WPah.); luwā (Ku.); lohu, lohā (N.); lo (A.B.); no (B.); lohā, luhā(Or.); loh (Mth) red, copper-colored, metal

mit eka one; **bar, barea, don** two; **pea pe pene** three; **pon, ponea, car** four; **mo~ṛe~** five; **turui** six;**eae, sat** seven; **iral** eight; **are, lo** nine; **gel** ten.

ban:gala = kumpaṭi = an:ga_ra śakaṭī = a chafing dish a portable stove a goldsmith’s portable furnace (Te.lex.) cf. ban:garu ban:garamu = gold (Te.lex.)



- **bahulā** = Pleiades (Skt.) **bagaḷā** = name of a certain godess (Te.lex .)
- **bagalo** = an Arabian merchant vessel (G.lex.) bagala = an Arab boat of a particular description (Ka.); bagala_ (M.); bagarige, bagarage = a kind of vessel (Ka.)(Ka.lex.) m1429 seal.

Md 602 prism seal, gharial holding fish, boat with 2 birds and cabin, text

Crete. Inscribed Cretan copper ox-hide ingot (After Fig.82 in: Sinclair Hood, 1971, *The Minoans: Crete in the Bronze Age*,

Thames and Hudson)



mu~h metal ingot (Santali) **mu~ha~** = the quantity of iron produced at one time in a native smelting furnace of the Kolhes; iron produced by the Kolhes and formed like a four-cornered piece a little pointed at each end; **mūhā me~r.he~t** = iron smelted by the Kolhes and formed into an equilateral lump a little pointed at each end; **kolhe tehen me~r.he~tko mūhā akata** = the Kolhes have to-day produced pig iron (Santali.lex.) kaula mengro 'blacksmith' (Gypsy) paired: dul 'likeness'; dul 'cast (metal)'

mangar 'crocodile' + kola 'fish'

kol 'pancaloha' (Ta.); kollan 'smith' (Ta.); kolme smithy (Ka.) Rebus: kaulo mengro 'blacksmith' (Gypsy)

bagala 'an Arabian merchant vessel' (G.Ka.)

baṭa 'quail'; bhaṭa 'furnace' (G.); baṭa 'a kind of iron' (G.)

bagaṛao 'adj. Mixture of different varieties' (Mu.) bagaḍavum 'to be adulterated (G.) alloy? Bangala 'chafing dish, a goldsmith's portable furance' (Te.)

bahulā 'pleiades' (Skt.) bagaḷā 'name of a certain female divinity' (Te.) bagaḍo 'the figure 2' (G.) (Note: orthography of glyphs in pairs)

bhāgala 'gate in the wall of a town' (G.)

Airavateswara temple, Dharasuram. Balustrate along steps. Elephant trunk merges into makara http://users.uoa.gr/~geeraae/ais/balustrade_veltman.jpg

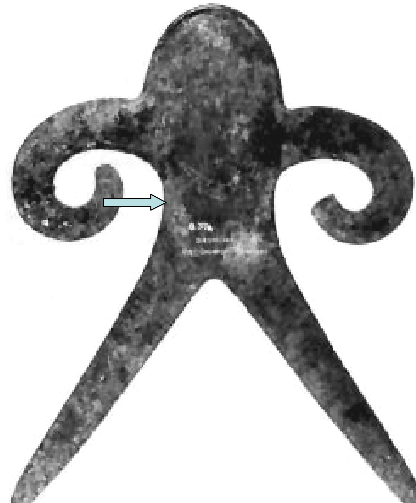


Anthropomorph with 'fish' sign incised on the chest and with curved arms like the horns of a markhor. Sheorajpur (Kanpur Dist., UP, India). State Museum, Lucknow (O.37) Typical find of Gangetic Copper Hoards. 47.7 X 39 X 2.1 cm. C. 4 kg. Early 2nd millennium BCE.

If it is an ibex, the rebus reading is: kala 'ibex'; rebus: kallan 'stone mason' (Ta.)

miṇḍāl markhor (Tor.wali) meḍho a ram, a sheep (G.)(CDIAL 10120)
meḍ iron (Ho.) **meṛed-bica** = iron stone ore, in contrast to **bali-bica**, iron sand ore (Mu.lex.)

kolli 'fish'; rebus: kol 'working in metal' (Ta.)



Funer[...]ainted designs.
maraka, peacock *Wkh. merg f. 'ibex' (CDIAL 9885).*
kolli 'fish' (Ma); kole.l 'smithy, temple' (Ko.) kol 'working in iron, blacksmith (Ta.)(DEDR 2133) Sind Ibex (*Capra aegagru, Erxleben* or *Capra hircus*, L.);Yellow limestone statue; U 81036; Mohenjodaro Museum (H: 16.5 cm.; L: 22 cm; B: 12.3 cm.) [loc. cit.Jansen and Urban, 1987, p. 67].
Bronze head of ibex. Iranian. C. 600-500 BCE. Ht. 14 in. Metropolitan Museum of Art

- Copper anthropomorph with 'fish' glyph incised

Habitat of ibex, *capra sibirica hemalayanus* : Both sides of the western Himalayas from Chitral in Pakistan, eastward to Leh and the upper Shyok River in Ladakh, and southeastward to the upper Sutlej River in northern India.

Capri ibex.













Pair of gazelle, cinkara

L048 ibex *kallan mason (Ma.); kalla glass beads (Ma.); kalu stone (Kond.a); xal id., boulder (Br.)(DEDR 1298).*

kala stag, buck (Ma.); kal a.r. Nilgiri ibex (Ko.); kalai stag, buck, male black monkey (Ta.); kalan:kompu stag's horn (Ta.)(DEDR 1312) (capra sibirica hemalayanus)

Kashmiri. kēla 1 केल / पशुविशेषः m. the ***ibex*** *or Ladākī goat (Capra sibirica, L. 114 kel and kail, El. kail). It is found in the mountains of Ladak, Baltistān, and Wardwān.*

Dholavira Sign-board

- Dholavira sign-board on the Gateway of the citadel. Mounted on the façade of the gate, the sign-board would have commanded the entire cityscape.
- Each of the ten signs 37cm. high, is made of crystalline rock.
- The wooden plank is about 3 m. long.
- Bottom: Close up of the first three signs from left to right.
- The 'spoked-wheel' sign seems to be the divider of a three-part message.

Hypothesis: Three types of metallurgical services are announced**.**

Message on Dholavira Signboard: metal services at a smithy

Dholavira (Kotda) on Kadir island, Kutch, Gujarat; 10 signs inscription found near the western chamber of the northern gate of the citadel high mound (Bisht, 1991: 81, Pl. IX); each sign is 37 cm. high and 25 to 27 cm. wide and made of pieces of white crystalline rock; the signs were apparently inlaid in a wooden plank ca. 3 m. long; maybe, the plank was mounted on the facade of the gate to command the view of the entire cityscape. Ten signs are read from left to right. The 'spoked circle' sign seems to be the divider of the three-part message. (Bisht, R.S., 1991, Dholavira: a new horizon of the Indus Civilization. *Puratattva*, Bulletin of Indian Archaeological Society, 20: 81; now also Parpola 1994: 113).

Nave of wheel: eraka; rebus: eraka, (copper) 'metal infusion'

Pair 'barea'; rebus: baṛea 'merchant' (vikalpa: dul 'cast metal'; dol 'likeness')

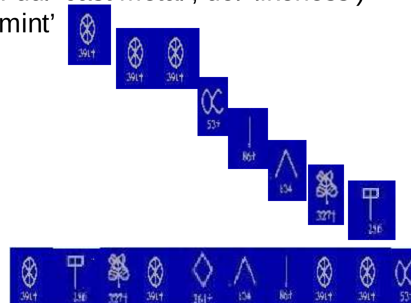
Claws of crab 'kamaṭha'; rebus: kampaṭṭam 'mint'

One 'met'; rebus: meḍ 'iron'

Lid 'aḍaren'; rebus: aduru 'native metal'

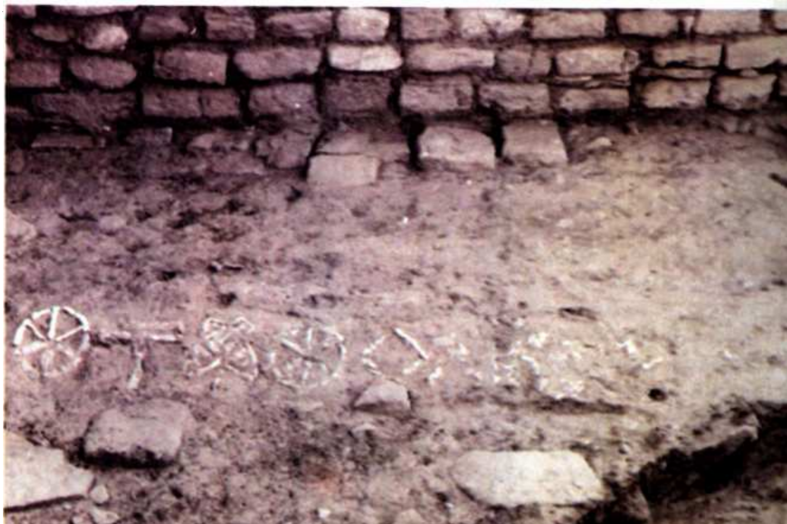
Fig leaf 'loa'; rebus: loh '(copper) metal'

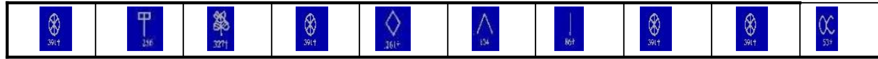
Peg 'khuṇṭa'; rebus: kūṭa 'workshop'





Dholavira: Inscribed sign-board found on the floor of a side room in the north gateway (ASI)









Dholavira Sign board mounted on gate to announce to seafarers:
molten cast furnace, mint, moltencast copperwork, native-metalwork, silver; metal-caster-mineral-smith

era = knave of wheel; rebus: **era** = copper; **erako** = molten cast (G.)

kund opening in the nave or hub of a wheel to admit the axle (Santali) **kundam, kund** a sacrificial fire-pit (Skt.)

khu~ṭi = pin (M.) **kuṭi**= furnace (Santali)

kamaḍha = ficus religiosa (Skt.); **kamaṭa** = portable furnace for melting precious metals (Te.); **kampaṭṭam** = mint (Ta.)

kana, kanac = corner (Santali); **kan~cu** = bronze (Te.) **kan-** copper work (Ta.)

aḍaren, **ḍ**aren lid, cover (Santali) Rebus: **aduru** 'native metal' (Ka.)

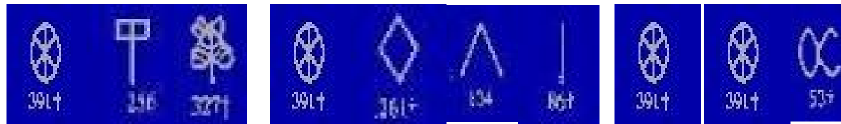
goṭ = one (Santali); **goṭi** = silver (G.)

barea = two (Ka.); **baṛea** = blacksmith (Santali)[A pair of glyphs showing nave of wheel, i.e. metal-caster-smith]

ḍato = claws of crab (Santali); **dhātu** = mineral (Skt.)







Dholavira (Kotda) on Kadir island, Kutch, Gujarat22; 10 signs inscription found near the western chamber of the northern gate of the citadel high mound (Bisht, 1991: 81, Pl. IX); each sign is 37 cm. high and 25 to 27 cm. wide and made of pieces of white crystalline rock; the signs were apparently inlaid in a wooden plank ca. 3 m. long; maybe, the plank was mounted on the facade of the gate to command the view of the entire cityscape. Ten signs are read from left to right. The 'spoked circle with an opening in the nave' sign seems to be the divider of the three-part message.

Message on Dholavira signboard: metalwork at a smithy

Dholavira = koṭda on Kadir island, kutch, Gujarat.

10 sign inscription found the near the western chamber of the northern gate of the citadel high mound (Bisht: 1991: 81, Pl. ix)

Each sign is 37 cm. high and 25 cm. to 27 cm. wide and made of pieces of white crystalline rock. Signs were apparently inlaid in a wooden plank ca. 3 m. long; maybe, the plank was mounted on the façade of the gate to command the view of the entire city and seascape.

Ten signs are read from left to right.

The 'spoked circle' seems to the divider of a 3-part message. (RS Bisht, 1991, Dholavira: a new horizon of the Indus civilization. *Puratattva*, Bulletin of Indian Archaeology Society 20:81; Asko Parpola 1994: 113)

Nave of wheel 'eraka'; rebus eraka 'copper'; 'metal infusion'

Part 1 baṛea 'pair'; baṛea 'merchant'; kakṛa 'crab'; rebus: kangar 'furnace'; eraka bar.ea kangar (Metal infusion merchant furnace)

Part 2 eraka 'furnaced copper' (eraka 'nave of wheel') med.h 'merchant'; med. 'iron'; rebus: met. 'one'; ad.aren 'lid'; aduru 'native metal'; kancu 'bronze' (Te.); kanac 'corner' (Santali) eraka med. ad.aren kanac (copper, iron merchant, native metal, bronze)

Part 3 eraka 'furnaced copper' (eraka 'nave of wheel'); loh 'copper' metal'; ficus 'loa'; **paca**r = a wedge driven ino a wooden pin, wedge etc. to tighten it (Santali.lex.) **pasra** = a smithy, place where a black-smith works, to work as a blacksmith; kamar pasra = a smithy; pasrao lagao akata se ban:? Has the blacksmith begun to work? pasraedae = the blacksmith is at his work (Santali.lex.)

Seal impression, Ur (Upenn; U.16747); [After Edith Porada, 1971, Remarks on seals found in the Gulf States. *Artibus Asiae* 33 (4): 331-7: pl.9, fig.5]; Parpola, 1994, p. 183; water carrier with a skin (or pot?) hung on each end of the yoke across his shoulders and another one below the crook of his left arm; the vessel on the right end of his yoke is over a receptacle for the water; a star on either side of the head (denoting supernatural?). The whole object is enclosed by 'parenthesis' marks. The parenthesis is perhaps a way of splitting of the ellipse (Hunter, G.R., *JRAS*, 1932, 476). m1405At Pict-97: Person standing at the center pointing with his right hand at a bison facing a trough, and with his left hand pointing to the sign



An unmistakable example of an 'hieroglyphic' seal. **kōḷ** 'planet' (Ta.). Rebus: **kol =** metal (Ta.) Sign 12 (80) *kuṭi* 'water carrier' (Te.) **kuṭhi** = kiln (Santali)

Enclosure signs of the field: **( )** *kuṭila* = bent, crooked (Skt.Rasaratna samuccaya, 5.205) Humpbacked *kuḍilla* (Pkt.)



kuṭila, katthīl = bronze (8 parts copper and 2 parts tin) [cf. āra-kūṭa, 'brass' (Skt.)



kuṭi, kuṭhi, kuṭa, kuṭha a tree (Kaus'.); *kud.a* tree (Pkt.); **kuṛā** tree; *kar.ek* tree, oak (Pas;.)(CDIAL 3228). *kuṭha, kuṭa* (Ka.), kuḍal (Go.) kuḍar. (Go.) *kuṭha_ra*, kuṭha, kuṭaka = a tree (Skt.lex.) *kut., kurun:* = stump of a tree (Bond.a); khuṭ = id. (Or.) *kuṭamu* = a tree (Te.lex.)



Molded terracotta tablet showing a tree with branches; the stem emanates from a platform (ingot?). Harappa. (After JM Kenoyer/Courtesy Dept. of Archaeology and Museums, Govt. of Pakistan).

The zebu (bra_hman.i bull) is: **aḍar ḍan:gra** (Santali); rebus: **aduru** 'native metal' (Ka.) **ayir** = iron dust, any ore (Ma.)

aduru = *gan.iyinda tegadu karagade iruva aduru* = ore taken from the mine and not subjected to melting in a furnace (Ka. Siddha_nti Subrahman.ya' S'astri's new interpretation of the Amarakos'a, Bangalore, Vicaradarpana Press, 1872, p. 330)

ḍhan:gar 'blacksmith' (WPah.) The bull is tied to a post. *tambu* = pillar (G.); *stambha* id. (Skt.) Rebus: **tamba** = copper (Santali) *tamire* = the pin in the middle of a yoke (Te.) Rebus: *tāmarasamu* = copper, gold (Te.) tibira = copper (Akkadian); tambra (Skt.)

baṭa = quail; **baṭa** = kiln (Santali)





- A zebu bull tied to a post; a bird above. Large painted storage jar discovered in burned rooms at Nausharo, ca. 2600 to 2500 BCE. Cf. Fig. 2.18, J.M. Kenoyer, 1998, Cat. No. 8.
- Twig is worn as a head-dress; the body is ligatured to the hindpart of a bull (h178b tablet)
- *ḍhagarā*m pl. the buttocks; the hips (G.lex.) Rebus: **ḍhā~gar., dhā~gar** blacksmith; digger of wells (H.)
- *aḍaru* twig; ad.iri small and thin branch of a tree*; aḍari* small branches (Ka.); *aḍaru* twig (Tu.)(DEDR 67). *adar* = splinter (Santali); rebus: **aduru** = native metal (Ka.)



- M1224d,e two sides of a seal

Buffalo's horns. Kotdiji burial vessel After Sankalia 1974: 354, fig. 88: b (=b), c (=c)

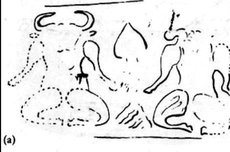


m305A, m181A  

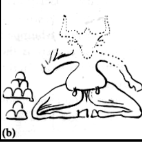
Buffalo-horned face. Painting on a jar. Kot Diji. C. 2800-2600 BCE [After Khan 1965, pl. XVIIb; cf. Fig. 2.25 in JM Kenoyer, 1998, *Ancient cities of the Indus Valley Civilization*, Karachi, Oxford University Press].

Buffaloes sitting with legs bent in yogic āsana. Susa Cc-Da, ca. 3000-2750 BC, proto-Elamite seals: (a-c) After Amiet 1972: pl. 25, no. 1017 (=a); and Amiet 1980a: pl. 38, nos. 581-2 (b-c)

- **sal** *'bos gaurus' bison;* sal 'workshop' (Santali) **Vikalpa: ran:gā** 'buffalo'; **ran:ga** 'pewter or alloy of tin (ran:ku), lead (nāga) and antimony (an~jana)'(Santali)
- **kōḷ** 'planet' (Ta.). Rebus: **kol =** metal (Ta.)



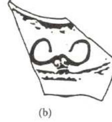
(a)



(b)



(c)



(b)



(c)



B007 water-buffalo

अर्थः - दर्शनम् Perception of objects

अर्थः - आपत्तिः *f.* [अर्थस्य अनुक्तार्थस्य आपत्तिः सिद्धिः] an inference from circumstances, presumption, im- plication, one of the five sources of knowledge or modes of proof, according to the Mīmāṁsakas. It is 'deduc- tion of a matter from that which could not else be'; it is 'assumption of a thing, not itself perceived but necessarily implied by another which is seen, heard, or proved' It is defined by Śabara as

दृष्टः श्रुतो वार्थो $न्यथा नोपपद्यते इत्यर्थ - कल्पना । यथा जीवति देवदत्ते गृहाभावदर्शनेन बहिर्भावस्यादृष्टस्य कल्पना ॥ Ms.1.1.5. It may be seen from the words दृष्टः and श्रुतः in the above definition, that Śabara has suggested two varieties of अर्थापत्ति *viz.* दृष्टार्थापत्ति and श्रुता - र्थापत्ति . The illustration given by him, however, is of दृष्टार्थापत्ति only.

The former *i. e.* दृष्टार्थापत्ति consists in the presumption of some अदृष्ट अर्थ to account for some दृष्ट अर्थ (or अर्थ s) which otherwise becomes inexplicable.

- दर्शनम् perception of objects; कुरुते दीप इवार्थदर्शनम् Ki.2.33; Dk.155. (Apte Skt. lex.)

kaulo-mengro, s. A blacksmith; kaulo ratti. Black blood, Gypsy blood (Gypsy). mangar `crocodile' (Bal.); kula 'house'. Rebus: kolli 'fish' (DEDR 2139)

Hieroglyphs:

elephant, boar/rhinoceros, tiger, tiger face turned

heifer, antelope, bullock, brahmani bull

Rebus mleccha glosses:

Ibha, badhia, kol, krammara kol

damṛa, melh, bail, adar ḍangra

Iron (ib), carpenter(badhi), smithy (kol 'pancaloha'), alloy-smith (kol kamar)

tam(b)ra copper, milakkhu copper, bali (iron sand ore), native metal (aduru), ḍhangar 'smith'



m0489At m0489Bt A standing human couple mating (*a tergo*); one side of a prism tablet from Mohenjo-daro (m489b). Other motifs on the inscribed object are: two goats eating leaves on a platform; a cock or hen (?) and a three-headed animal (perhaps antelope, one-horned bull and a short-horned bull). The leaf pictorial connotes on the goat composition connotes loa; hence, the reading is of this pictorial component is: lohar kamar = a blacksmith, worker in iron, superior to the ordinary kamar (Santali.lex.)]

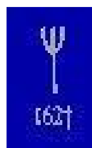
pattar 'goldsmiths' (Ta.) patra 'leaf' (Skt.) melh 'goat' (Br.); milakkhu 'copper' (Pali)

r-an:ku, ran:ku = fornication, adultery (Te.lex.); rebus: ranku 'tin' (Santali)

Frequency of pair: 54
Text 2609



ranku 'liquid measure'; rebus: ranku 'tin' (Santali)



kolmo 'rice plant'; kolom 'three' (Mu.)



Rebus: kolami 'furnace, smithy' (Te.)

Terminal pairs

184

110

87

26

10

8

6

Rebus: kangar 1 कंगर् m. a large portable brazier (El.). **kāgürü** काँग्ु &above;रू &below; or **kāgürü** काँग &above;रू &below; or **kāgar** काँग्र् I हसब्तिका f. (sg. dat. **kāgre** काँग्य or **kāgare** काँगर्य , abl. **kāgri** काँग्रि), the portable brazier, or *kāngrī,* much used in Kashmīr (K.Pr. *kángár,* 129, 131, 178; *káṅgrí,* 5, 128, 129). For particulars see El. s.v. *kángri;* L. 7, 25, *kangar;* and K.Pr. 129. The word is a fem. dim. of **kang,** q.v. (Gr.Gr. 37). kāgri-khŏphürü

kangha (IL 1333) ka~ghera_ comb-maker (H.)

kaṇḍa kanka 'furnace khanaka, miner'

kolom, 'sprout'; rebus: kolimi, 'furnace'; paired: dul 'likeness'; dul 'cast (metal)'

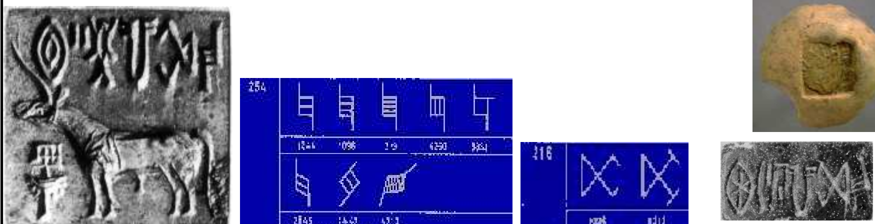
kuṭi 'water-carrier' (Te.); kut.hi 'smelter' (Santali) [ligatured with kaṇḍa kanka]

meḍ 'body'; rebus: 'iron' (Mu.)

A ligatured glyph is a terminal (15 out of 17 occurrences of the glyph) aḍaren 'lid'; rebus: aduru 'native metal' + dhatu 'mineral' (da~_t.u 'cross')

Pair frequency: 29

Examples: m0833, Lothal 122 Slide 137 (Kenoyer, Harappa). This Early Harappan seal impression or sealing of a square seal has several script signs and two ladder like motifs (Kot Diji Phase, c. 2800 BC). The wet clay was probably placed on a bundle of goods to seal it and then was broken off when the bundle was opened. Since this sealing was found in a hearth area, it is probable that the raw clay was hardened accidentally when it was swept into the fire along with other trash, possibly even the rope or reeds used to bundle the goods.



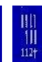
ḍato 'claws or pincers (chelae) of crabs' (Santali); Rebus: dhātu 'mineral'; dhatu = a mineral, metal (Santali)

Sign 254; is apparently related to the work in a smithy related to minerals (dhatu) – linked with the use of kaṇḍa kanka 'fire-altar'.

Bshk. *panjǟ̆r* 'ladder, stairs' (CDIAL 7760) Rebus: pasra 'smithy' (Santali)

 Kandiyur celt epigraph Sign 293 

- **me~t = the eye** (Santali) **mendī** = eyelashes (Halbi); kandl mindig (pl.) eyelash (Kol.); mindi, mindi_ (Go.); koṇḍa-miṇḍi eyelid, eyelash (Go.)(DEDR 4864).
- **meḍ** Iron, iron implements (Ho) (Santali. lex. Bodding)

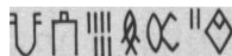
Frequency of pairs: 27, 14    

gaṭṭi ban:gāru = gold in ingots or bars (Te.) kat.t.i = clod, lump (Ta.)(DEDR 1148)

kolom 'three'; gaṇḍa 'four'; rebus: kolami 'forge' (Te.); ka ṇḍ 'fire-altar' (Santali)

m1534 , Text 1703 Combination glyph of boar and bull

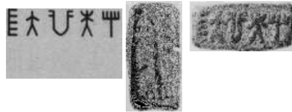


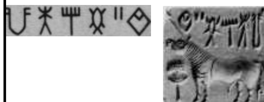
Text 3096

gaṭa = a small stream or water course (Santali) gaṭṭu = a shore, a bank; a dam, embankment, dike (Te.) kaṭṭā platform (Kol.); kaṭṭa bund of field, dam, dike (Nk.)(DEDR 1147).

Frequency of pair: 40
h188, m0144





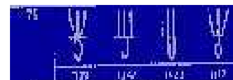


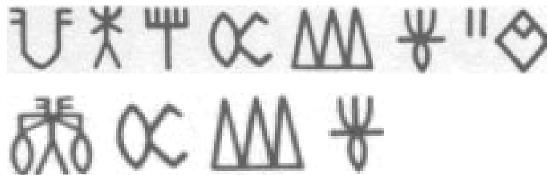
aḍar ‘harrow’; aduru ‘native metal’ (Ka.)
meḍ ‘body’; koḍ ‘horns’; meḍ ‘iron’; koḍ ‘artisan’s workshop’

kuṭi ‘tree’; rebus: kuṭhi ‘smelter’ (Santali)

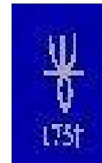
Frequency of three signs (trigram): 10

E.g., m1085, Text 2159, h094









ḍhālako = a large metal ingot (G.) **ḍhālak**ī = a metal heated and poured into a mould; a solid piece of metal; an ingot (G.)



kolom = cutting, graft; to graft, engraft, prune; **kolma hoṛo** = a variety of the paddy plant (Desi)(Santali.) kolom ‘three’ (Mu.) Rebus: kolami ‘furnace, smithy’ (Te.)

ṭākuro = hill top (N.); ṭān:gī = hill, stony country (Or.); **ṭān:gara** = rocky hilly land (Or.); ḍā n:gā = hill, dry upland (B.); ḍa~_g = mountain-ridge (H.)(CDIAL 5476). Rebus: ḍān:ro = a term of contempt for a blacksmith (N.)(CDIAL 5524). ṭhākur = blacksmith (Mth.) (CDIAL 5488).

kamaṭha = a crab, a tortoise (G.lex.) Rebus: **kammaṭa** = mint, gold furnace (Te.) kampaṭṭam ‘mint’ (Ta.)



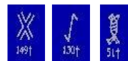


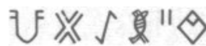


Circumgraph

Sign 61 s ligatured with 'fish sign' and enclosed within a circumgraph. The three ligaturing components of Sign 61 may be read as: gaṇḍa 'four'; beḍa 'fish'; koḍa 'sluice'. The rebus substantives are: kaṇḍa 'furnace'; beḍa 'hearth'; koḍ 'artisan's workshop' [Alternative: ḍāḷ = water-course (G.); ḍhāḷo = large metal ingot; a~s = scales of fish (Santali); rebus: aya = iron (G.); ayah, ayas = metal (Skt.)]

Frequency of three signs (trigram): 37



m0816, Text 2424 

h012, Text 4005 



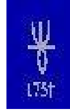


dā~ṭu = cross over; daṭ- (da.ṭ-t-) to cross (Kol.)(DEDR 3158) Rebus: dhātu 'mineral'; dhatu = a mineral, metal (Santali)

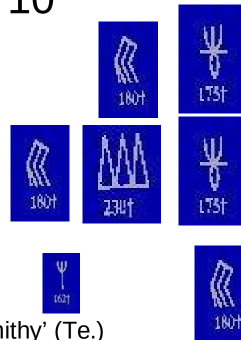
tot.xin, tot.xn goldsmith (To.)(DEDR 3039) Bi. *ṭhaṭherā* 'brass-worker'(CDIAL 5493)

tốttra— n. 'goad for cattle or elephants' ŚBr. [√tud] Pa. *tutta*— n. (with *u* from tudáti?), Pk. *totta*—, *tutta*- n.; Si. *tutta* 'elephant goad' (CDIAL 5966) ***Ta.*** **tōṭṭi** elephant hook or goad, hook, clasp, sharp weapon planted in the ground to keep off enemies (DEDR 3547)

bica 'scorpion'; rebus: samṛobica, stones containing gold (Mundari) ; bica 'iron sand ore' (Santali)



This glyph and its variants have a dominant presence in punch-marked coins (mints). It occurs in 54 epigraphs. In 40% of these, the pairing in 10 + 10 occurrences:



ḍhālako = a large metal ingot (G.)

Sign 180: quadruped
pasaramu, pasalamu = an animal, a beast, a brute, quadruped (Te.lex.)
pasra = a smithy, place where a black-smith works, to work as a blacksmith; kamar pasra = a smithy; pasrao lagao akata se ban:? Has the blacksmith begun to work?
pasraedae = the blacksmith is at his work (Santali.lex.)

kolmo 'paddy plant' (Santali); rebus: **kolami** 'furnace, smithy' (Te.)

C.L. Fabri, *JRAS*, 1935, pp. 307-318
KK Thapliyal in *Studies in Ancient Indian Seals* found that many Indian seals from the 3rd century BCE to 7th century CE, portray animals, with an inscription above the animal (just like in the case of the Harappan seals).

PUNCHMARK	INDUS SIGNS
Theobald 55.	159, 317, 217.

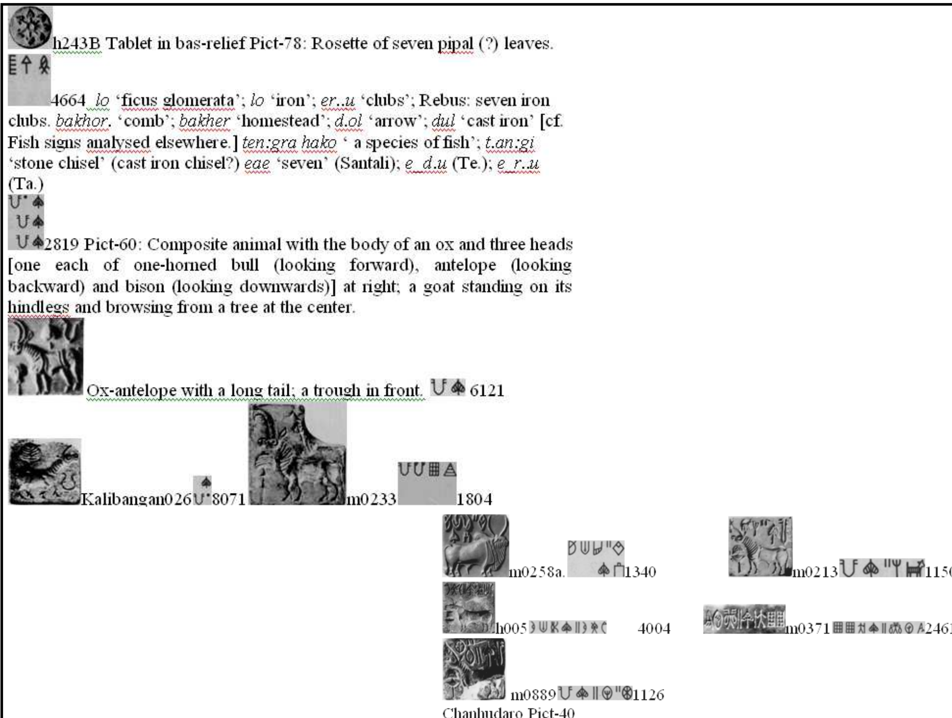
Comparison of Punch and Indus Valley Writing



Punch-marked coin Sun hieroglyph; M0428b

[Or, sun depicted with rays? glyph: **arka** 'sun'; rebus substantive: **akka, arka** 'copper'] Meaning: akka, aka (Tadbhava of arka) metal (Ka.); akka metal (Te.) arka = copper (Skt.) cf. arh, argha a collection of twenty pearls (having the weight of a Dharan.a) VarBr.S.; worth , value , price , Mn. Ya_jn~.; arghya = valuable (Skt.) akka-ca_lai metal works (Cilap. 16,126, Urai); mint; akkaca_laiyar goldsmiths, jewellers (Ta.lex.) 5952a.Workshop of a goldsmith: aka-sa_la, aga-sa_la, aka-sa_liga, aka-sa_le a gold or silversmith; aka-sa_like the business of a gold or silver smith; akka-sa_le, aka-sa_le the workshop of a goldsmith; a goldsmith; akka-sa_liti a woman of the goldsmith caste (Ka.); akka-c-ca_lai a shop where metals are worked (Ta.)(Ka.lex.) CDIAL 624 arká— 1 m. 'flash, ray, sun' RV. [√arc] Pa. Pk. *akka*— m. 'sun', Mth. *āk;* Si. *aka* 'lightning', inscr. *vid—äki* 'lightning flash'.

- *அருக்கம் ¹ arukkam*
- *, n. < **arka**. (நாநார்த்த .) 1. Copper; செம்பு .*
- அற்கன் ar̲kan̲
- , *n*. < ***arka***. Sun; சூரியன் . அற்கன் மேல்வரு மெழிலிகளென (கந்தபு . கயமுகன்வ . 35).



h243B Tablet in bas-relief Pict-78: Rosette of seven pipal (?) leaves.

4664 *lo* 'ficus glomerata'; *lo* 'iron'; *er..u* 'clubs'; Rebus: seven iron clubs. *bakhor*. 'comb'; *bakher* 'homestead'; *d.ol* 'arrow'; *dul* 'cast iron' [cf. Fish signs analysed elsewhere.] *ten:gra hako* ' a species of fish'; *t.an:gi* 'stone chisel' (cast iron chisel?) *eae* 'seven' (Santali); *e_d.u* (Te.); *e_r..u* (Ta.)

2819 Pict-60: Composite animal with the body of an ox and three heads [one each of one-horned bull (looking forward), antelope (looking backward) and bison (looking downwards)] at right; a goat standing on its hindlegs and browsing from a tree at the center.

Ox-antelope with a long tail; a trough in front. 6121

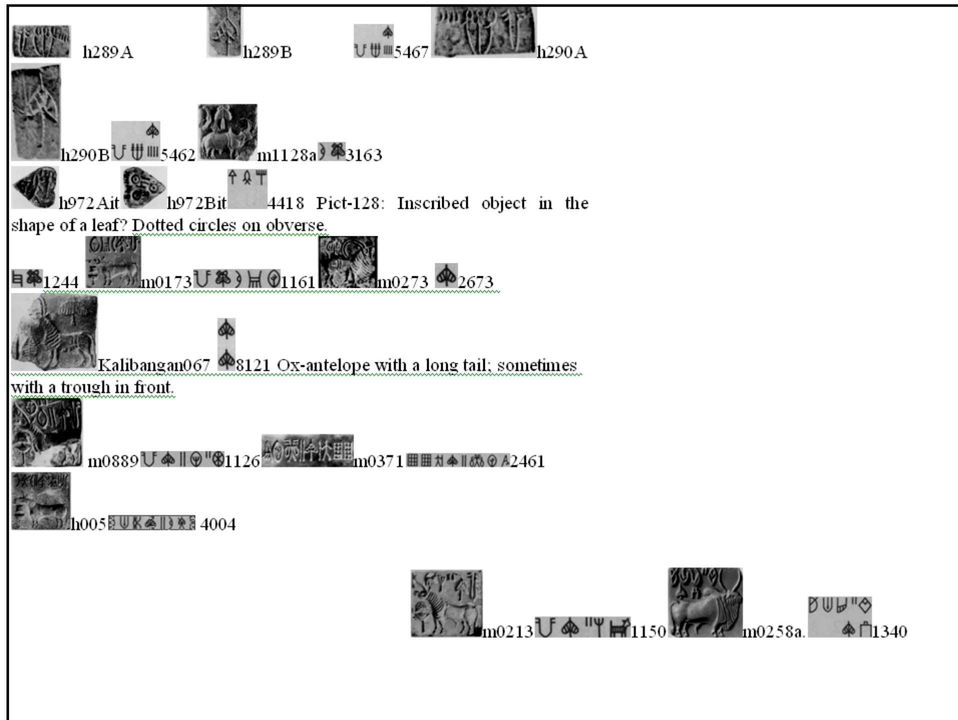
Kalibangan026 8071 m0233 1804

m0258a. 1340 m0213 1150

h005 4004 m0371 2461

m0889 1126

Chanhudaro Pict-40



H243b

ḍaṭhi, ḍaṭi = the petioles and mid-ribs of a compound leaf after the leaflets have been plucked off, stalks of certain plants, as Indian corn, after the grain has been taken off (Santali)

dhātu 'mineral' (Vedic); a mineral, metal (Santali)

Imperial series

*ஆரம் ² āram , *n*. < *āra*. 1. Spoke of a wheel. See ஆரக்கால் . ஆரஞ் சூழ்ந்த வயில்வாய் நேமியொடு (சிறுபாண் . 253). 2. Brass; பித்தளை . (அக. நி .)

Imperial, 1st Series

M428b arka 'sun'; **agasāle** 'goldsmithy' (Ka.)

kāmaṭhum = a bow; kāmaḍī, kāmaḍum = a chip of bamboo (G.)

Asmaka janapada

Silver bent-bar

kamaṛkom = fig leaf (Santali.lex.) **kamarmaṛā** (Has.), **kamaṛkom** (Nag.); the petiole or stalk of a leaf (Mundari.lex.)

3261

kampaṭṭam coinage, coin (Ta.); kammaṭṭam, kammiṭṭam coinage, mint (Ma.); kammatia coiner (Ka.)(DEDR 1236) kammaṭa = coinage, mint (Ka.M.) kampaṭṭa-k-kūṭam mint; kampaṭṭa-k-kāran- coiner; kampaṭṭa-muḷai die, coining stamp (Ta.lex.)



Both platforms show feline legs:
kolo 'jackal')(Kon.) kol 'pancaloha' (Ta.) kaṇḍō 'a stool' (Kur.)(DEDR 1179). kuṭhe 'leg of bedstead chair' (Santali)Rebus: koṭe 'forged (metal)(Santali)
kaṇḍ 'fire-altar' (Santali)
Six dots on fish: bhaṭa 'six' (G.) bhaṭa 'furnace' (G.)
meḍhā m. 'curl (M.); rebus: meḍ 'iron' (Ho.)
ayo = fish (Mu.); ayas = metal (Skt.)
beḍa, beḍa hako 'fish' (Santali); rebus: bed.a 'hearth' (G.)
kātī 'woman who spins the thread'; khād. 'trench, fire-pit' (G.) khattar 'attendant' (Pali)

Kashmiri: gāḍ गाड् । मीनः f. a **fish** (K.Pr. 14, 38, 63, 14, 15, 168, 258; H. i, 8, 9)

khātī 'wheelwright' (H.)

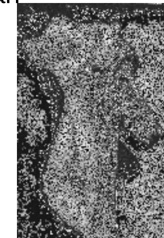
http://hindunet.org/saraswati/Elamspin.jpg **Musee du Louvre. Paris. An elegantly coiffed, exquisitely-dressed and well fanned Elamite woman sits on a lion footed stool winding thread on a spindle. This five-inch fragment is dated 8th century BC. It was molded and carved from a mix of bitumen, ground calcite, and quartz. The Elamites used bitumen, a naturally occurring mineral pitch, or asphalt, for vessels, sculpture, glue, caulking, and waterproofing.**
http://www.oznet.net/iran/elamspin.htm



M0308 **meḍhi, miḍhi_, meṇḍhī** = a plait in a woman's hair; a plaited or twisted strand of hair; an ewe (P.lex.) *meḍhā* m. 'curl, snarl, twist or tangle in cord or thread' (M.)(CDIAL 10312) meṛed (Mun.d.ari); meḍ 'iron' (Ho)
Six locks on the *cūḍa* 'diadem, hairdress' of the woman can be read as a hieroglyph: rebus: cūḷa 'furnace') (Santali) bhaṭa 'six' (G.) bhaṭa 'furnace' (G.)

S. *vāraṇu* 'to shut, forbid' (CDIAL 11553) Rebus: **bharat** (5 copper, 4 zinc and 1 tin)(P.) **bharan** or **toul** alloy of brass or zinc and bronze. (B.)

Together with *kol* 'tiger, woman'; rebus: **kol** 'metal of five alloys, *pan~caloha'* the glyph connotes: metal alloy furnace/workshop. *kōlupuli* = Bengal tiger (Te.); *kol* = tiger (Santali) *kōla* = woman (Nahali)
kol metal (Ta.) **kol** = pan~calōkam (five metals) (Ta.lex.)



Feline figurine terracotta. A woman's face and headdress are shown.
The base has a hole to display it on a stick. **(After JM Kenoyer/ Courtesy Dept. of Archaeology and Museums, Govt. of Pakistan).**

B009 markhor (*capra falconeri heptneri*)

Dm. *mrarī* m. 'markhor'(CDIAL 9885)
Tor. *miṇḍ* 'ram', *miṇḍā́l* 'markhor'
(CDIAL 10310) Rebus: meḍ 'iron' (Ho.)
pajhaṛ 'eagle'; **pajhaṛ** = to sprout from a root
pasra 'smithy' (Santali)

Griffin, Baluchistan (Provenance unknown); ficus leaves, tiger, with a wing, ligatured to an eagle. Kamaṛkom 'ficus' (Santali); rebus: kampaṭṭam 'mint' (Ta.)

beḍa = fish (Santali); rebus: **beḍa** = hearth (G.)

- Unprovenanced Harappan-style cylinder seal impression; Musee du Louvre; cf. Corbiau, 1936, An Indo-Sumerian cylinder, *Iraq* 3, 100-3, p. 101, Fig.1; De Clercq Coll.; burnt white agate; De Clercq and Menant, 1888, No. 26; Collon, 1987, Fig. 614. A hero grasping two tigers and a buffalo-and-leaf-horned person, seated on a stool with hoofed legs, surrounded by a snake and a fish on either side, a pair of water buffaloes. Another person stands and fights two tigers and is surrounded by trees, a markhor goat and a vulture above a rhinoceros.

Capra falconeri heptneri, markhor

9905 Prob. West Asian find
Pict-117: two bisons facing each other.

Ligatured tiger on a Nal pot ca 2800 BC (Baluchisan: first settlement in southeastern Baluchistan was in the 4th millennium BC) is extraordinary: an eagle's head is ligatured to the body of a tiger. In BMAC area, the 'eagle' is a recurrent motif on seals.

Signs 162 to 168 [Orthography: sprout].

pajhar. = to sprout from a root; pagra = a cutting of sugar-cane used for planting (Santali.lex.)

xolā = tail (Kur.); qoli id. (Malt.)(DEDr 2135). [Note the rump of ox with tail depicted ligatured to horned, standing persons]. Rebus: kol 'smithy' (Ta.)

panje, panjho = the hand opened out; a claw, a paw; the five on a dice in play; *pasli_* the hollow of the hand (G.) pan~jali = with outstretched hands, as token of reverence (Skt. pra_n~jali)(Pali.lex.) pan~ja_ = the paw, the palm; the image of a hand worshipped and taken in procession during the Mohurrum festival (Te.lex.)

Sign 169 **pajhaṛ** = to sprout from a root; pagra = a cutting of sugar-cane used for planting (Santali.lex.) kol 'tiger'; rebus: kol 'smithy'

pasra = a smithy, place where a black-smith works, to work as a blacksmith; kamar pasra = a smithy; pasrao lagao akata se ban:? Has the blacksmith begun to work? pasraedae = the blacksmith is at his work (Santali.lex.)

Sign 21 Sign 22 Sign 23 Sign 24 Sign 90 Sign 91 Sign 223
Sign 224 Sign 227 Sign 235 Sign 270 Sign 271 Sign 273 Sign
274 Sign 291 Sign 331 Sign 346 Sign 347 Sign 348 Sign
349 Sign 350 Sign 351 Sign 352 Sign 355 Sign 356 Sign 357
Sign 371 Sign 372 Sign 387 Sign 388 Sign 389 Sign 390 Sign 395
Sign 405
Signs
90,91,223,224,227,235.262,270,273,274,282,283,291,331,347-352,355-357, 371,372, 388-390,395,405
[With ligatures of Sign 162 or Sign 169]

Kamboja-Dvaravati route ran from Kamboja mahajanapada in northeast Afghanistan and southern Tajikistan to Dvaraka in Anarta (Gujarat). Kautilya’s Arthas’astra –4th century BCE -- notes Kamboja and Saurashtra as composed of vartta-s’astra-upajivin (people living by agriculture, trade and weapons). [*kamboja. saurāṣṭra.kṣatriya śreny.adayo vartta. śastra.upajīvinah*| 11.1.04]

Kauṭiliya also notes that the trade route across Dakshinapatha, the south, is the “superior route” for it is rich in mines and abounds in “diamonds, rubies, pearls, and gold.”

Dramatic attestations of a maritime tradition linking Kamboja of northwestern Bharat along the coastline of Gujarat, Sind and Srilanka are evidenced by the presence of pearls and gems brought by trade. There is a possibility that there was also trade in metals and sharing of traditions of the writing system.

neeye vaḍapāl munivaṉ taḍavinuḷ tōnr-I
cempu punaintu iyar-r-iya cēṇneḍum puricai
uvarāīkai tuvarai āṇṭu
nār-pattonpadu vaṟimur-ai vanta
vēḷirul.vēḷē vir-ar- pōraṇṇal
tāraniyānaic cēṭṭu irunkōve

- cempu puricai ‘ancient, long copper fortifications’; tuvarai āṇṭu… ‘king among kings, ruling Dwaraka and descending from 49 generations’.

Chief vēḷir was tuvarāpati for 49 generations

201. இவர் என் மகளிர்!
பாடியவர்: கபிலர்.
பாடப்பட்டோன் : இருங்கோவேள்.
திணை; பாடாண். துறை: பரிசில்.
(குறிப்பு: பாரி மகளிரை உடன் கொண்டு சென்ற காலத்துப் பாடியது.)

`இவர் யார்?` என்குவை ஆயின், இவரே,
ஊருடன் இரவலர்க்கு அருளித் ,தேருடன்

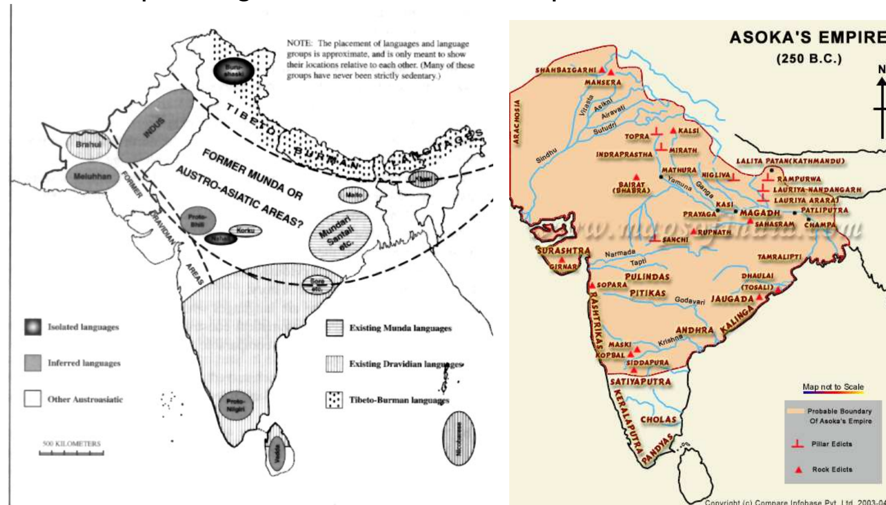
முல்லைக்கு ஈத்த செல்லா நல்லிசை,
படுமணி யானைப்,பறம்பின் கோமான்
நெடுமாப் பாரி மகளிர்; யானே
தந்தை தோழன்: இவர்என் மகளிர்;
அந்தணன், புலவன், கொண்டுவந் தனனே;
நீயே, வடபால் முனிவன் தடவினுள் தோன்றிச்,
செம்பு புனைந்து இயற்றிய சேண்நெடும் புரிசை,
உவரா ஈகைத், துவரை ஆண்டு,
நாற்பத்து ஒன்பது வழிமுறை வந்த
வேளிருள் வேளே! விறற்போர் அண்ணல்!
தாரணி யானைச் சேட்டிருங் கோவே!
ஆண்கடன் உடைமையின், பாண்கடன் ஆற்றிய
ஒலியற் கண்ணிப் புலிகடி மா அல்!
யான்தர, இவரைக் கொண்மதி! வான்கவித்து
இருங்கடல் உடுத்தஇவ் வையகத்து, அருந்திறல்
பொன்படு மால்வரைக் கிழவ! வென்வேல்
உடலுநர் உட்கும் தானைக்,
கெடல்அருங் குறைய நாடுகிழ வோயே!

- Migration from Tuvarai in 12th century inscription (Pudukottai State inscriptions, No. 120) cited by Avvai S. Turaicāmi in Puranaanuru, II (SISSW Publishing Soc., Madras, 1951).
- *tuvarai mānakar ninru ponta tonmai pārttu kkiḻ ivēntan nikaril ten kavirnādu tannil nikaṟvitta nitiyāḷar*

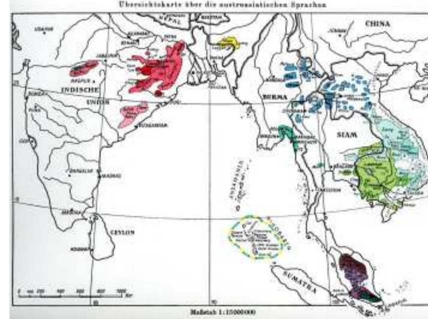
http://www.tamilnation.org/literature/ettuthokai/pm0057.pdf

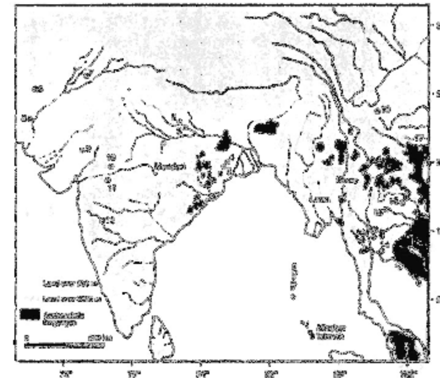
147

Pre-Indo-Aryan substratum languages (After F. Southworth, 2005, *Linguistic Archaeology of South Asia*, New York, RoutledgeCurzon, p. 65)
Mleccha-speaking areas of Asoka's empire



Austro-asiatic speakers: Pinnow map http://www.ling.hawaii.edu/austroasiatic/ Correlates with bronze-age sites (extension of Ganga basin iron-age sites) [After Fig. 8.1 in: Charles Higham, 1996, *The Bronze Age of Southeast Asia*, Cambridge University Press].





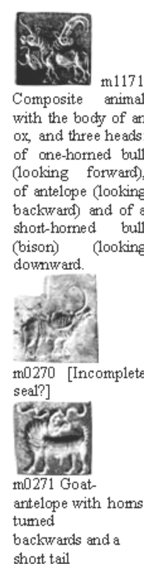
Writing system through glyphs (1)

Inscribed objects with only pictorial motifs (no texts)

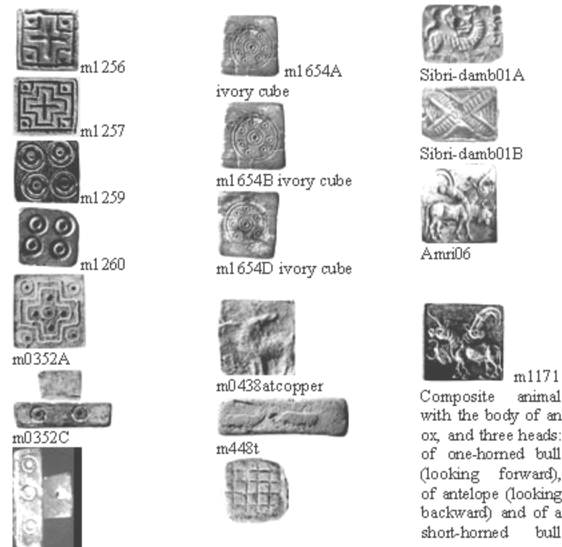


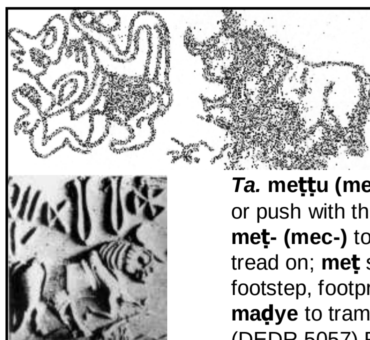






Writing system through glyphs (2)





Left. Margiana, stamp seal: obverse, attacking lion; reverse: a bull copulating with a woman. ; Right: Chanhujo-daro seal: the bull is leaning over a lying woman with opened legs (Mackay, 1943, pl. 51:

Ta. **meṭṭu (meṭṭi-)** to spurn or push with the foot. ***Ko.*** **meṭ- (mec-)** to trample on, tread on; **meṭ** sole of foot, footstep, footprint. ***Malt.*** **maḍye** to trample, tread. (DEDR 5057) Rebus: meḍ 'iron' (Ho.)

Seal Chanhujodaro (Mackay 1943: pl. 51: 13).

ḍhan:ga = tall, long shanked; *maran: d.han:gi aimai kanae* = she is a big tall woman (Santali.lex.) Rebus: **ḍhan:gar** 'blacksmith'

meḍ 'body'; meḍ 'iron' (Ho.) Vikalpa: **kāṭhī** = body, person; **kāṭhī** the make of the body; the stature of a man (G.)



Obverse of steatite Dilmun stamp seal from Failaka Island (c. 2000 BCE). A human figure and a variety of animals – two antelopes one with its head looking backward; possibly a scorpion at the feet of the human figure. A dotted circle is seen above one antelope and a vase in between the antelope and the human figure. Kuwait National Museum. French Archaeological Expedition in Kuwait. Several inscriptions at Failaka mention the Dilmunite god Enzak and his temple or Mesopotamian deities. [Remi Boucharlat, Archaeology and Artifacts of the Arabian Peninsula, in: Jack M. Sasson (ed.), *Civilizations of the Ancient Near East*, pp. 1335-1353].



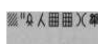
Axe-head of brown schist (L 15 cm) with the head of a leopard or lioness on the butt. From the palace of Mallia, destroyed in LM I B ca. 1450 BCE. After Plate 90 in: Sinclair Hood, 1971, *The Minoans*, New York, Praeger Publishers



Shaft-hole axhead with a bird-headed demon, boar,and dragon, late 3rd–early 2nd millennium BCE Central Asia (Bactria-Margiana) Silver, gold foil; 5 7/8 in. (15 cm) "Western Central Asia, now known as Turkmenistan, Uzbekistan, and northern Afghanistan, has yielded objects attesting to a highly developed civilization in the late third and early second millennium B.C. Artifacts from the region indicate that there were contacts with Iran to the southwest. Tools and weapons, especially axes, comprise a large portion of the metal objects from this region. This shaft-hole axhead is a masterpiece of three-dimensional and relief sculpture. Expertly cast in silver and gilded with gold foil, it depicts a bird-headed hero grappling with a wild boar and a winged dragon. The idea of the heroic bird-headed creature probably came from western Iran, where it is first documented on a cylinder seal impression. The hero's muscular body is human except for the bird talons that replace the hands and feet. He is represented twice, once on each side of the ax, and consequently appears to have two heads. On one side, he grasps the boar by the belly and on the other, by the tusks. The posture of the boar is contorted so that its bristly back forms the shape of the blade. With his other talon, the bird-headed hero grasps the winged dragon by the neck. The dragon, probably originating in Mesopotamia or Iran, is represented with folded wings, a feline body, and the talons of a bird of prey."









M1390, Text 2868; m0451, Text 3235; h166 **Harappa Seal**; Vats 1940, II: Pl. XCI.255 . **Two seals from Gonur** 1 in the Murghab delta; dark brown stone (Sarianidi 1981 b: 232-233, Fig. 7, 8); eagle engraved on one face.





Eagle incised on the lid of perhaps a compartmented box made of chlorite. Tepe Yahya. (After Fig. 9.7 in Philip H. Kohl, 2001, opcit.)





Eagle incised on a ceremonial axe made of chlorite. Tepe Yahya. (After Fig. 9.6 in Philip H. Kohl, 2001, opcit.)

The association of **pajhar** 'eagle' with a + glyph on h166 points to the association of the + with **pasra** 'smithy' (Santali)

m1390B

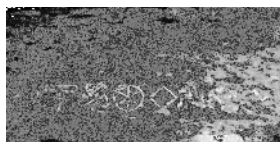


Mohenjodaro: horned tiger

(After Scala/Art Resource)



^ glyph as a pictorial (lid) Lexemes: **aḍaren, ḍaren** lid, cover (Santali) Rebus: **aduru** ‘native metal’ (Ka.)

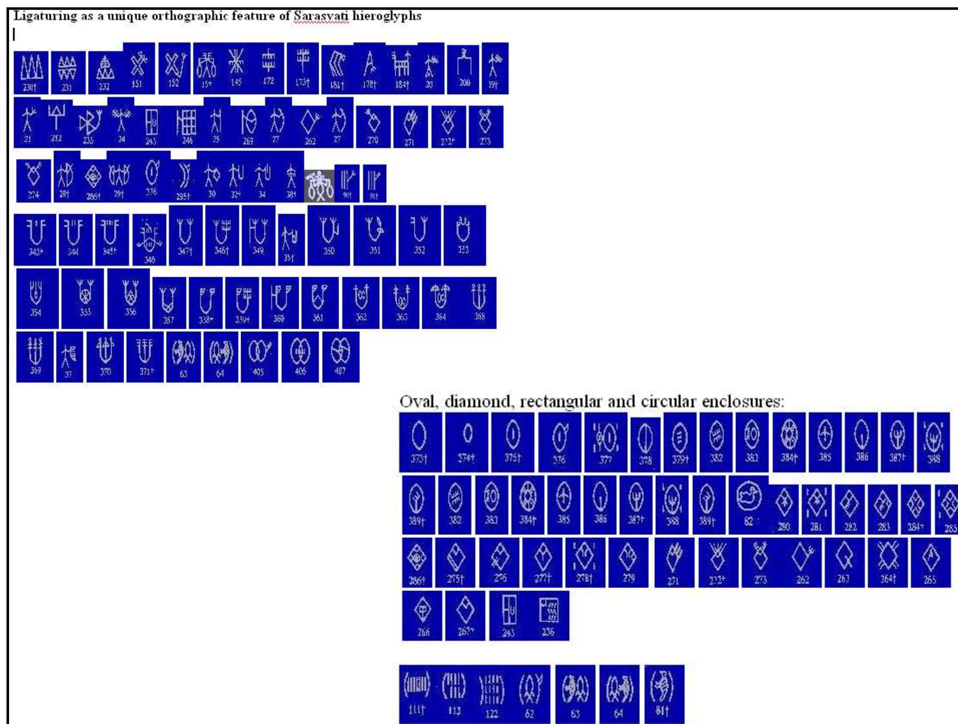


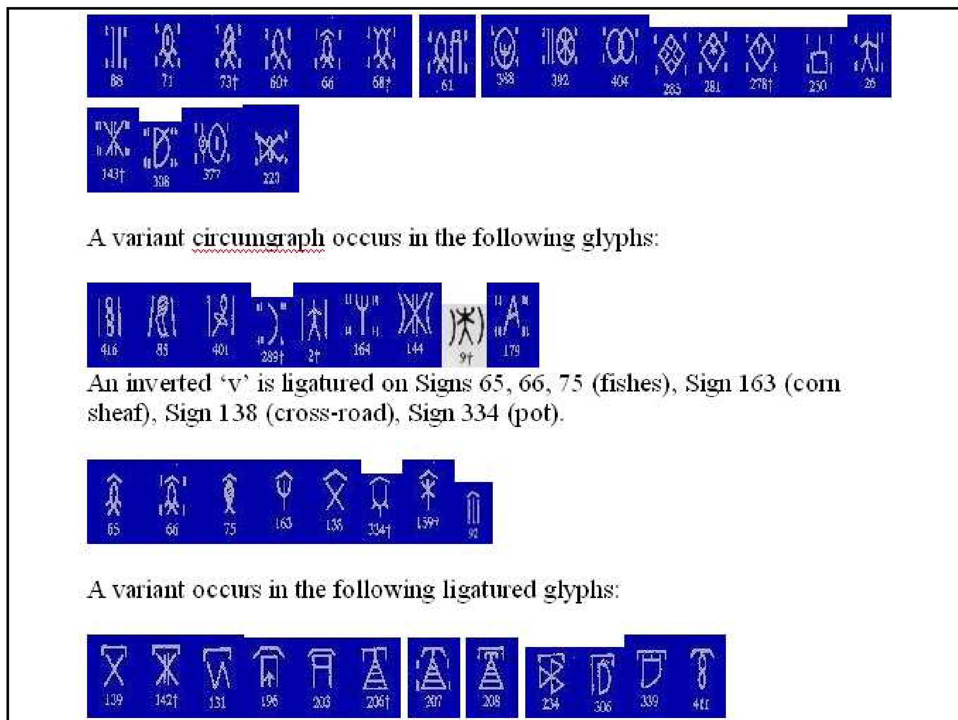
Signboard on the North Gate leading to the walled citadel. Dholavira. Courtesy ASI. Fourth glyph from right is ^

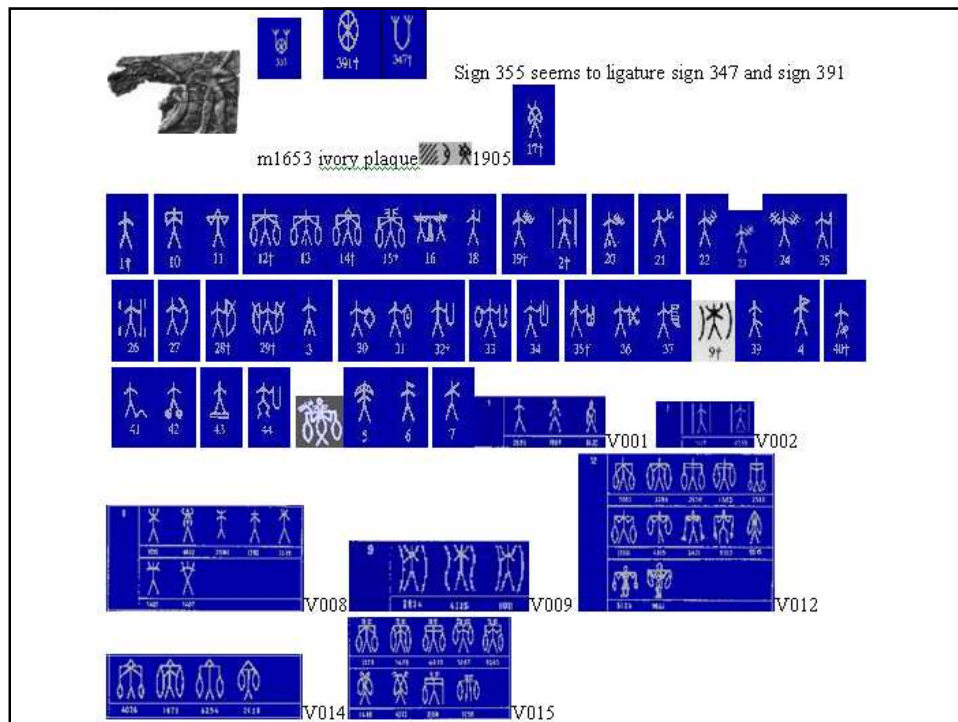


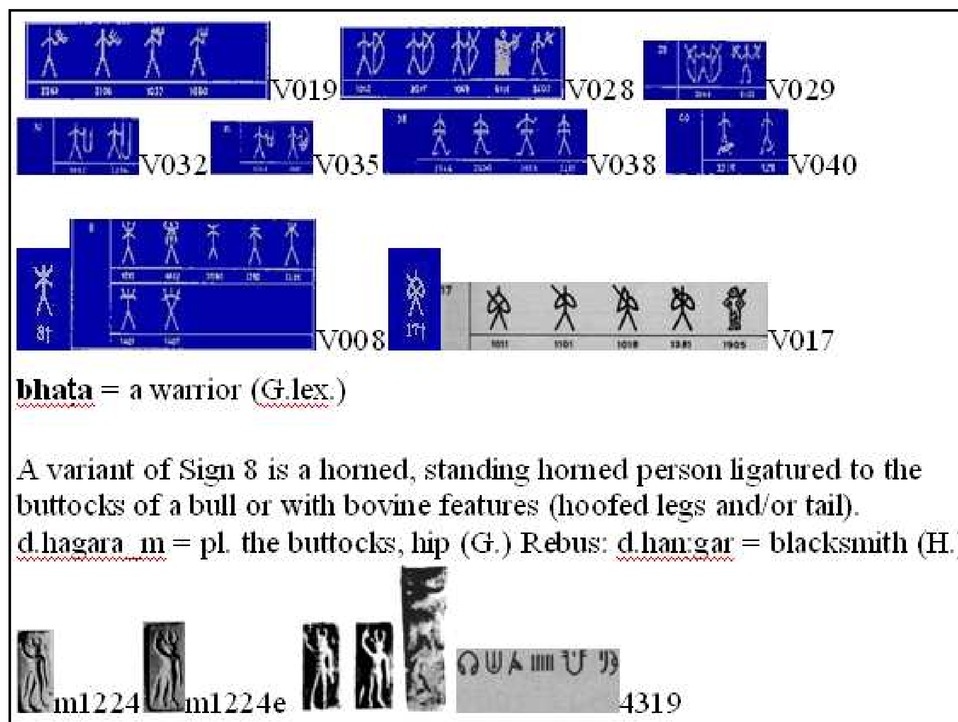
Button seal (circa 2800 to 2600 BCE). Harappa. (After JM Kenoyer/Courtesy Dept. of Archaeology and Museums, Govt. of Pakistan). *d.aren,* ***aḍaren*** to cover up pot with lid (Bond.a); d.arai to cover (Bond.a.Hindi)

aduru = *gan.iyinda tegadu karagade iruva aduru* = ore taken from the mine and not subjected to melting in a furnace (Ka. Siddhānti Subrahman.ya’ S’astri’s new interpretation of the Amarakos’a, Bangalore, Vicaradarpana Press, 1872, p. 330)


Ligaturing as a unique orthographic feature of Sarasvati hieroglyphs
Oval, diamond, rectangular and circular enclosures:


A variant circumgraph occurs in the following glyphs:
An inverted 'v' is ligatured on Signs 65, 66, 75 (fishes), Sign 163 (corn sheaf), Sign 138 (cross-road), Sign 334 (pot).
A variant occurs in the following ligatured glyphs:


Sign 355 seems to ligature sign 347 and sign 391
m1653 ivory plaque
1905
V001
V002
V008
V009
V012
V014
V015


V019
V028
V029
V032
V035
V038
V040
V008
V017
bhata = a warrior (G.lex.)
A variant of Sign 8 is a horned, standing horned person ligatured to the buttocks of a bull or with bovine features (hoofed legs and/or tail).
d.hagara_m = pl. the buttocks, hip (G.) Rebus: d.han:gar = blacksmith (H.)
m1224
m1224e
4319

Sign 15 is a ligature of Sign 12 and Sign 342

h073 4617 [An orthographic representation of a water-carrier].

m0838 2368 m0215 3081 m0741

2421 m0969 2239 Lothal042 m0188 1287

PLUS a number of variants and with ligatures: Signs162, 167, 169, 387,389 +variants; Ligatures: Signs163, 166-6, 168, 90, 91,223,224,227,235.262,270,273,274, 282,283,291,331, 347-352, 355-357,371,372, 388-390,395,405 **kolom** = cutting, graft; to graft, engraft, prune; kolom dare kana = it is a grafted tree; kolom ul = grafted mango; kolom gocena = the cutting has died; kolom kat.hi hor.o = a certain variety of the paddy plant (Santali); Rebus: **kolime**= furnace (Ka.)

Signs162, 167, 169, 387,389 +variants; Ligatures: Signs163, 166-6, 168, 90, 91,223,224,227,235.262,270,273,274, 282,283,291,331, 347-352, 355-357,371,372, 388-390,395,405

Sign 21 Sign 22 Sign 23 Sign 24 Sign 90 Sign 91 Sign 223 Sign 224 Sign 227 Sign 235 Sign 270 Sign 271 Sign 273 Sign 274 Sign 291 Sign 331 Sign 346 Sign 347 Sign 348 Sign 349 Sign 350 Sign 351 Sign 352 Sign 355 Sign 356 Sign 357 Sign 371 Sign 372 Sign 387 Sign 388 Sign 389 Sign 390 Sign 395 Sign 405

Signs 90,91,223,224,227,235.262,270,273,274,282,283,291,331,347-352,355-357, 371,372, 388-390,395,405 [With ligatures of Sign 162 or Sign 169]

Signs 162 to 168 [Orthography: sprout].

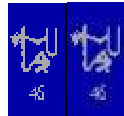
pajhar. = to sprout from a root; pagra = a cutting of sugar-cane used for planting (Santali.lex.)

(26) **Sign 15 (126)**

V176 Ligatured signs: V173

Signs 176, 165, 166, 382 *kām.sako* = a large-sized comb (G.lex.) Alternative decoding of Sign 176: Comb **kangha** (IL 1333) *ka~gherā* comb-maker (H.)

kan:g = brazier, fireplace (K.)(IL 1332) Portable brazier

  Signs 45/46 (seated person) seem to ligature the pictorial of a kneeling-adorant with sign 328 **erugu** = to bow, to salute or make obeisance (Te.) **er-agu** = obeisance (Ka.), irai (Ta.) Rebus: eraka 'molten cast (metal)(Tu.)










Drummer, chain glyph (also a punch-marked coin glyph)

- Drummer, m1406B
- **ḍan:gara, ḍan:gura** public notice by a crier who beats a tom-tom (Ka.); ḍān:gorā (M.); ḍangura (Te.); tan.d.ora (Ta.); ḍavan.dī (M.)(Ka.lex.) **iṭan:kā ram** = left-hand side of a double drum (Ta.lex.) [Note a drummer glyph] Rebus: ṭhākur blacksmith (Mth.)(CDIAL 5488). d.āṇro term of contempt for a blacksmith (N.)(CDIAL 5524)
- **kaḍi_** a chain; a hook; a link (G.) Rebus: **kaḍiyo** [Hem. Des. **kaḍa i o** = Skt. sthapati a mason] a bricklayer; a mason; kaḍiyan.a, kaḍiyen.a a woman of the bricklayer caste; a wife of a bricklayer (G.)





Svastika as an object





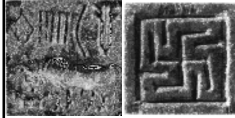
M0488, Text 2801

Prism: Tablet in bas-relief. Side b: Text +One-horned bull + standard. Side a: From R.: a composite animal; a person seated on a tree with a tiger below looking up at the person; a svastika within a square border; an elephant (Composite animal has the body of a ram, horns of a zebu, trunk of an elephant, hindlegs of a tiger and an upraised serpent-like tail). Side c: From R.: a horned person standing between two branches of a pipal tree; a ram; a horned person kneeling in adoration; a low pedestal with some offerings.

maṇḍa = a branch; a twig (Te.lex.)
maṇḍi = kneeling position (Te.lex.)
mandil, mandir = temple (Santali) māḍa = shrine of a demon (Tu.); māḍia = house (Pkt.); māḷa a sort of pavilion (Pali); māḷikai = temple (Ta.)(DEDR 4796).
maṇḍiga = an earthen dish (Te.lex.) maṇḍe = a large earthen vessel (Tu.lex.) maṇḍi earthen pan, a covering dish (Kond.a); cooking pot (Pe.); brass bowl (Kui); basin, plate (Kuwi)(DEDR 4678). maṇḍe = head (Kod.)(DEDR 4682).
maṇḍā = warehouse, workshop (Kon.lex.)

Copper plate m1457
h182 tablet in bas-relief
im488A prism tablet
m1225 cube seal with perforation through breadth



ḍ**an:gara,** ḍ**an:gura** public notice by a crier who beats a tom-tom (Ka.); ḍān:gorā (M.); ḍangura (Te.); tan.d.ora (Ta.); ḍavan.dī (M.)(Ka.lex.) **iṭan:kā ram** = left-hand side of a double drum (Ta.lex.) [Note a drummer glyph] Rebus: ṭhākur blacksmith (Mth.)(CDIAL 5488). d.āṇro term of contempt for a blacksmith (N.)(CDIAL 5524)

- *svastika* pewter (Kannada); **jasta** = zinc (Hindi) **yasada** (Jaina Pkt.)
- **meṛhao** = to entwine itself, wind round, wrap around, roll up (Santali.lex.)
- **meṛiya** = a rock (Te.) **meṛed, me~ṛed** iron; **enga meṛed** soft iron; **saṇḍi meṛed** hard iron; **ispāt meṛed** steel; **dul meṛed** cast iron; **i meṛed** rusty iron, also the iron of which weights are cast; bica mer.ed iron extracted from stone ore; **bali meṛed** iron extracted from sand ore; **meṛed-bica** = iron stone ore, in contrast to **bali-bica**, iron sand ore (Mu.lex.)
  – *ḍhompo* = knot on a string (Santali) **ḍhompo** = ingot (Santali)
  -- ḍan:gara, d.an:gura public notice by a crier who beats a tom-tom (Ka.); rebus: ḍhangar 'blacksmith'
  -- **mo~ṛe~** five (Santali); rebus: maṇḍā = warehouse, workshop (Kon.lex.) Alt. (vikalpa) meḍ 'iron' (Ho.)

damṛa = heifer, young bull, steer (G.); rebus: tambra = copper (Skt.)
damaḍī (H.) damṛi, dambṛi = one eighth of a copper pice (Santali)

bail 'ox'; bali 'iron sand ore' (Santali) Vikalpa: homa = bison (Pengo); rebus: hom = gold (Ka.); soma = electrum, gold-silver compound ore (RV)

baṭa = quail; rebus: baṭa = kiln (Santali); baṭa = a kind of iron (G.); beḍa = fish (Santali); rebus: beḍa = hearth (G.) *barea* = two, a pair; rebus: baṛae = blacksmith (Santali) Vikalpa: dol 'likeness'; rebus: dul 'cast (metal)(Mu.)

- Tell Suleimeh (level IV), Iraq; IM 87798; (al-Gailani Werr, 1983, p. 49 No. 7). A fish over a short-horned bull and a bird over a one-horned bull; cylinder seal impression, (Akkadian to early Old Babylonian). Gypsum. 2.6 cm. Long 1.6 cm. Dia. [Drawing by Larnia Al-Gailani Werr. Cf. Dominique Collon 1987, *First impressions: cylinder seals in the ancient Near East*, London: 143, no. 609]
- Tree in front. Fish in front of and above a one-horned bull. Cylinder seal impression (IM 8028), Ur, Mesopotamia. White shell. 1.7 cm. High, dia. 0.9 cm. [Cf. T.C. Mitchell, 1986, Indus and Gulf type seals from Ur in: Shaikha Haya Ali Al Khalifa and Michael Rice, 1986, *Bahrain through the ages: the archaeology*, London: 280-1, no.8 and fig. 112]. "No.7...A bull, unhumped, of the so-called 'unicorn' type, raises his head towards a simplified version of a tree, and two uncertain objects, one a sort of trefoil, are shown above his back. Under his head is an unmistakable character of the Indus script, the 'fish' with cross-hatchings..." (C.J. Gadd, Seals of Ancient Indian Style Found at Ur', in: G.L. Possehl, ed., 1979, *Ancient Cities of the Indus*, Delhi, Vikas Publishing House, p. 117).





The zebu (bra_hman. bull) is: *ad.ar d.an:gra* (Santali); rebus: **aduru** 'native metal' (Ka.) **ayir** = iron dust, any ore (Ma.)

aduru = *gan.iyinda tegadu karagade iruva aduru* = ore taken from the mine and not subjected to melting in a furnace (Ka. Siddha_nti Subrahman.ya' S'astri's new interpretation of the Amarakos'a, Bangalore, Vicaradarpana Press, 1872, p. 330)

ḍhan:gar 'blacksmith' (WPah.) The bull is tied to a post. *tambu* = pillar (G.); *stambha* id. (Skt.) Rebus: **tamba** = copper (Santali) *tamire* = the pin in the middle of a yoke (Te.) Rebus: *ta_marasamu* = copper, gold (Te.) tibira = copper (Akkadian); tambra (Skt.)

baṭa = quail; baṭa = kiln (Santali)



- A zebu bull tied to a post; a bird above. Large painted storage jar discovered in burned rooms at Nausharo, ca. 2600 to 2500 BCE. Cf. Fig. 2.18, J.M. Kenoyer, 1998, Cat. No. 8.
- Twig is worn as a head-dress; the body is ligatured to the hindpart of a bull (h178b tablet)
- *aḍaru* twig; ad.iri small and thin branch of a tree*; aḍari* small branches (Ka.); *ad.aru* twig (Tu.)(DEDR 67). *adar* = splinter (Santali); rebus: **adaru** = native metal (Ka.)
- *ḍhagarā***m** pl. the buttocks; the hips (G.lex.) Rebus: **ḍhā~gaṛ, ḍhā~gar** blacksmith; digger of wells (H.)
- miṇḍāl 'markhor' (Tōrwālī)
- Rebus: meḍ 'iron' (Mu.)
- M1224d,e two sides of a seal

dul meṛeḍ cast iron (Mundari. Santali) *dul* 'to cast metal in a mould' (Santali) **pasra meṛed, pasāra meṛed** = syn. of **koṭe meṛed** = forged iron, in contrast to **dul meṛed**, cast iron (Mundari.lex.)

m1367a Two bisons butting

bali 'iron sand ore'; balīvarda 'ox' (Skt.) **meṛed-bica** = iron stone ore, in contrast to **bali-bica**, iron sand ore (Mu.lex.)



Rebus: *dol* 'likeness, picture, form' [e.g., two tigers, two bulls, sign-pair.]

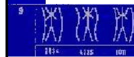
Kashmiri. dula दुल । युग्मम् m. a pair, a couple, esp. of two similar things (Rām. 966).

ḍhōla — m. 'large drum'(Skt.); daul id. (Gypsy) (CDIAL 5608)

ḍol 'the shaft of an arrow, an arrow' (Santali)



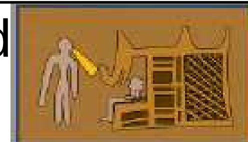




Forged (metal) **koṭe meṛed** = forged iron (Mu.)

- CDIAL 3230 **kuṭi—** in cmpd. 'curve', *kuṭika*— 'bent' MBh. [√kuṭ 1] Ext. in H. *kuṛuk* f. 'coil of string or rope'; M. *kuḍcā* m. 'palm contracted and hollowed', *kuḍapṇẽ* 'to curl over, crisp, contract'.
- 3231 **kuṭilá—** 'bent, crooked' KātyŚr., °*aka* — Pañcat., n. 'a partic. plant' lex. [√kuṭ 1] Pa. *kuṭila*— 'bent', n. 'bend'; Pk. *kuḍila*— 'crooked', °*illa* — 'humpbacked', °*illaya* — 'bent'DEDR 2054 ***(a) Ta.*** **koṭu** curved, bent, crooked; **koṭumai** crookedness, obliquity; **koṭukki** hooked bar for fastening doors, clasp of an ornament; **koṭuṅ-kāy** cucumber; **koṭuṅ-kai** folded arm; **koṭu-maram** bow; **koṭu-vāy** curved or bent edge (as of billhook); **koṭu-vāḷ** pruning knife, billhook, sickle, battle-axe; **kuṭa** curved, bent; **kuṭakkam** bend, curve, crookedness; **kuṭakki** that which is crooked; **kuṭakkiyaṉ** humpback; **kuṭaṅku (kuṭaṅki-)** to bend ***(intr.)*; kuṭaṅkai** palm of hand; **kuṭantai** curve; **kuṭavu (kuṭavi-)** to be crooked, bent, curved; ***n.*** bend, curve; **kuṭā** bend, curve; **kōṭu (kōṭi-)** to bend, be crooked, go astray, be biased; ***n.*** crookedness, obliquity; **kōṭal** bending, curving; **kōṭi** bend, curve; **kōṭṭam** bend, curve, warp, partiality, crookedness (as of mind); **kōṭṭu (kōṭṭi-)** to bend **(*tr.*); ṭoṅku** crookedness. ***Ma.*** **koṭuṅ-kai** bent arm; **koṭu-vāḷ** hatchet, large splitting knife; **kōṭuka** to be crooked, twisted, awry, warp (of wood); **kōṭṭuka** to bend **(*tr.*); kōṭṭam** crookedness, distortion; **kōṭṭal** what is crooked, turn, way of escape. ***Ko.*** **koṛy** crick in neck from sleeping crooked or lifting heavy burden.

h176 standing person, seated person, bull (gaur), house?



- Analysed by Huntington




sal = Indian Gaur, *Bos Gaurus* (or, *Gavaeus Gaurus*); Rebus: *sal* = v. open a smithy, work a smithy; *teken kamarko sal akata* = the blacksmiths are working to-day (have started their forge)(Santali)

குடி kuṭi 'house' (Ta.) kuṭhi 'smelter' (Santali) Vikalpa: khuṇṭi 'a post' (Santali) khuṇṭum a stump; portion of a tree or plant left in the ground; khuṇṭiyum an upright support in the frame of a wagon (G.)

khāṭ 'bier' (H.G.M.Kon.); khaḍū— 1 m. 'bier' lex. 2. khaṭṭi— m. lex. [Cf. kháṭvā—] 1. B. *khaṛu* 'bier'. 2. B. *khāṭi* 'bier', Or. *khāṭa* (CDIAL 3785) Rebus: Pk. *khaḍḍā*— f. 'hole, mine, cave' (CDIAL 3790) **kaḍiyo** [Hem. Des. **kaḍa i o** = Skt. sthapati a mason] a bricklayer; a mason; kaḍiyaṇa, kaḍiyeṇa a woman of the bricklayer caste; a wife of a bricklayer (G.) rebus: khāti_ member of a caste of wheelwrights (H.)(CDIAL 3647).

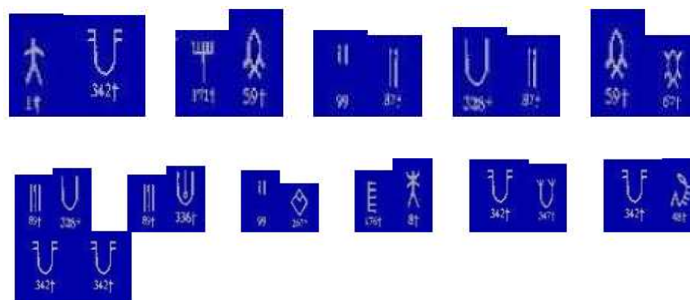
Kashmiri. dula दुल । युग्मम् m. a pair, a couple, esp. of two similar things (Rām. 966). Rebus: dul 'cast (metal)'; eraka 'nave of wheel'; Rebus: eraka 'copper'; kaṇḍa kanka 'rim of jar'; rebus: fire-altar of khanaka, miner.

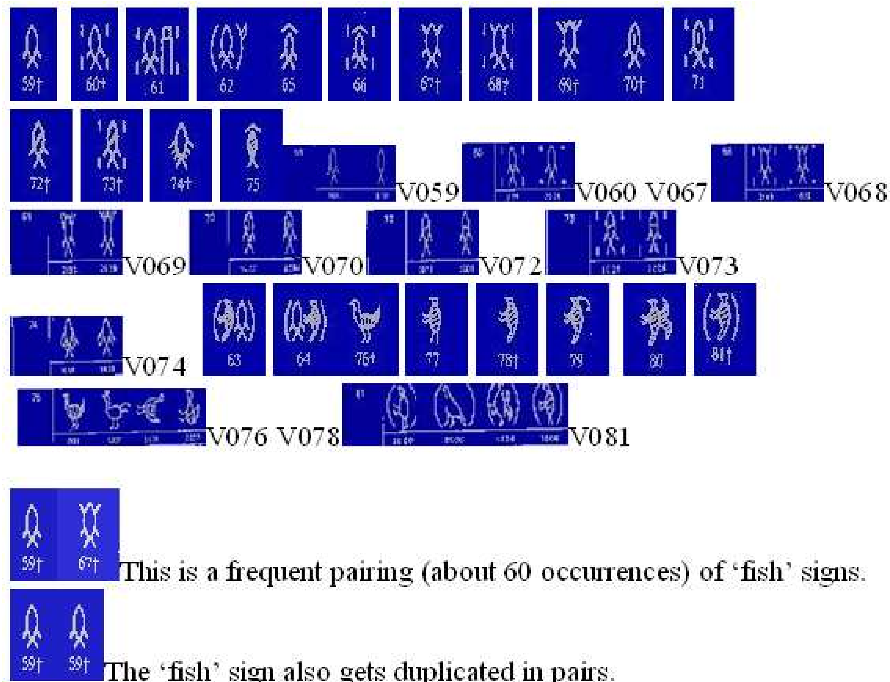
Five pairs of signs with 65 to 87 occurrences; seven pairs of signs with 93 to 291 occurrences

Numerals (linear stroke counts) are read rebus aṭar ‘splinter’ (Ma.); aḍaruni ‘to crack’ (Tu.)

aduru ‘native metal (Ka.)
a~s ‘scale of fish (Santali); rebus: ayas ‘metal’ (Phonetic determinant)

sal stake, spike, splinter, thorn, difficulty (H **sal** ‘workshop’ (Santali);





This is a frequent pairing (about 60 occurrences) of ‘fish’ signs.

The ‘fish’ sign also gets duplicated in pairs.

Signs 72, 67 (6) Signs 72, 67, 65 (2) Signs 67, 65 (4)

Signs 59, 65 (5) Signs 70, 67 (3)

kōlā 'flying fish, exocaetus; garfish, belone (Ta.); kōlā-mīn, kōli needle-fish (Ma.)(DEDR 2241); rebus: **kol** = metal; working in iron (Ta.); kole.l – smithy' (Ko.)(DEDR 2133).

Sign 70 A short stroke within the body of the fish) affixed to the basic 'fish' pictograph.

sal stake, spike, splinter, thorn, difficulty (H.); salī small thin stick; saliyo bar, rod, pricker (G.); śol reed (Kho.)(CDIAL 12343). salleha, selleha = splinter (Ka.lex.)
Rebus: sal 'workshop' (Santali); śa_la id. (Skt.)

Hence, sal + beda (spike + fish); rebus: sal 'workshop'; beda 'hearth'|

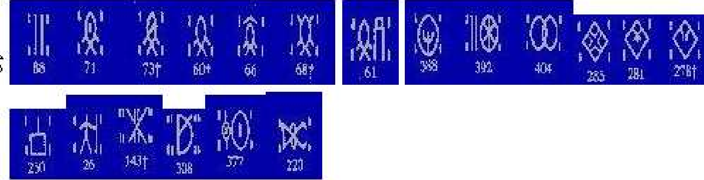
1241 occurrences of 'fish' signs
1395 occurrences of 'rim of jar' signs
m296 seal and epigraph (text)

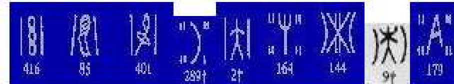
Epigraphs 5477, 1554; 4604, 5477

Parpola notes (1994, pp.69-70): "…the four strokes around the 'fish' sign may in fact be understood to be read after it, and that their meaning is close to the sign 'arrow' that is often found in this position." gaṇḍa 'four' (Santali)

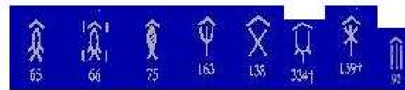
Many circumscribed signs occur as the left-most glyph and comparable to the 'rim of jar' sign 342 in position. Similarly, the 'arrow' sign terminates 184 epigraphs (read from right to left) – in a total of 227 arrow-sign occurrences

The rim of jar is: kaṇḍa kanka (Santali); arrow is kaṇḍa
kaṇḍa 'fire-altar (Santali); kan 'copper' (Ta.)

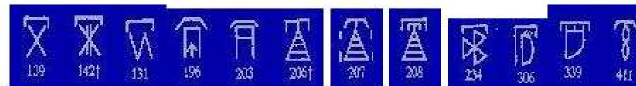




A variant circumgraph occurs in the following glyphs:



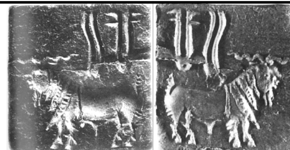
An inverted 'v' is ligatured on Signs 65, 66, 75 (fishes), Sign 163 (corn sheaf), Sign 138 (cross-road), Sign 334 (pot).



A variant occurs in the following ligatured glyphs:

Damṛa 'heifer' rebus: tam(b)ra 'copper'







ayaskāṇḍa

a quantity of iron, excellent iron (Pāṇ.gaṇ)

eṛaka 'upraised arm' (Ta.); rebus: **eraka** = copper (Ka.)
Ayo 'fish'; kaṇḍa 'arrow'; rebus: ayaskāṇḍa
miṇḍāl 'markhor' (Tōrwālī)
Rebus: meḍ 'iron' (Mu.)

mu~he 'face'; mu~h 'ingot' (Santali)

M1179, m1180 Human-faced markhor with long wavy horns, with neck-bands and a short tail.

Banawali 23A A tall person with an upraised arm in front of a one-horned bull and a markhor with upturned faces (apparently listening to the person); two signs occur: 'fish' and 'arrow' graphemes. The sealing is on terracotta. The ten steatite seals and one sealing have only come from the lower town, not the citadel…these seals were generally recovered from houses which on the basis of their contents…have been tentatively attributed to a trader or jeweler (Bisht, R.S., 1982, Excavations at Banawali: 1974-77, in: Gregory L. Possehl, *Harappan Civilization*, Delhi, p.118).

Administrative tablet with cylinder seal impression of a male figure, hunting dogs, and boars, 3100–2900 B.C.; Jemdet Nasr period (Uruk III script) Mesopotamia Clay; H. 2 in. (5.3 cm) The seal impression depicts a male figure guiding two dogs on a leash and hunting or herding boars in a marsh environment.

Traces of tree on platform are visible to the left of the jackal (?).



H243b

pattar leaf, foliage (L.)(CDIAL 6455); rebus: pattar 'goldsmiths' (Ta.)



ara, arā (RV.) = spoke of wheel

- **eruvai** = copper (Ta.); **ere -** a dark-red colour (Ka.)(DEDR 817). **eraka, era, er-a** = syn. **erka**, copper, weapons (Ka.)
- ஆரம்² āram
- , *n*. < *āra*. 1. Spoke of a wheel. See ஆரக்கால். ஆரஞ் சூழ்ந்த வயில்வாய் நேமியொடு (சிறுபாண். 253). 2. Brass; பித்தளை. (அக. நி.)
- śatamāna silver bent bar with leaves topping spokes (Chennai museum)





பத்தர்[2] **pattar** , *n*. < T. *battuḍu*. A caste title of goldsmiths

paṭṭa— 1 m. 'slab, tablet' (CDIAL 7699)

pat leaf (Bshk.); pathar, patras (K.)(CDIAL 6455) h312







paṭṭar-ai community; guild as of workmen (Ta.); **pattar** merchants; perh. vartaka
samna samni = face to face (Santali); rebus: samanom 'gold' (Santali)
bail 'bull'; rebus: bali 'iron sand ore' (Santali)
kuṭi 'tree'; kuṭhi 'smelter' (Santali)
aḍaren 'lid'; rebus: aduru 'native metal'
ayo 'fish'; ayas 'metal'
bharaḍo 'spine'; bharan 'to spread or bring out from a kiln' (P.) **baran, bharat** (5 copper, 4 zinc and 1 tin)(P.B.)
kaṇḍ kanka 'rim of jar'; rebus: fire-altar miner (Santali)
kangha 'comb'; kangar 'portable furnace' (K.)

Slide 205 (harappa.com) Faience tablet or standard. This unique mold-made faience tablet or standard (H2000-4483/2342-01) was found in the eroded levels west of the tablet workshop in Trench 54. On one side is a short inscription under a rectangular box filled with 24 dots (or one pairs of 12 dots). The reverse has a narrative scene with two bulls fighting under a thorny tree.



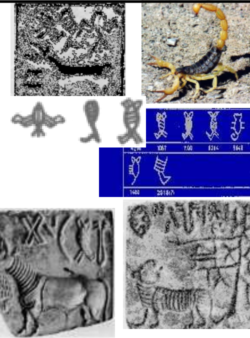




Copper tablets m0578, m1534 Texts: 2908, 1703
Two horned heads one at either end of the body. Note the dottings on the thighs which is a unique artistic feature of depicting a rhinoceros (the legs are like those of a rhinoceros?). The body apparently is a combination of two rhinoceroses with heads of two bulls (or, nilgai, blue bull?) attached on either end of the composite body.

Nilgai, blue bull: goḍ = bison (Go.); guḍva = nilgai (Pa.); koḍal (māv = a kind of deer; khoḍḍa ma_v = blue bull (Go.); gura = bison (Konḍa) (DEDR 1664) gōdalu = pl. horned cattle of any kind; as in: goḍḍugōdalu (Te.lex.); goḍlu = horned cattle; gōda = an ox (Te.lex.) The rings on the neck of the ligatured head: koṭiyum 'a wooden circle put round the neck of an animal. Clearly, this glyptic element can be seen as a phonetic determinant.
badhia 'castrated boar' (Santali); **baḍhi** 'a caste who work both in iron and wood' (Santali) goḍlu = horned cattle (Te.); Rebus: **koḍ** 'smithy'; **kol.el** 'smithy, temple in Kota village' (Ko.)

There are two orthographic variants: one denotes a scorpion; another a musk-rat or bandicoot. It could also be viewed as a rat ligatured to a stinger -- scorpion's stinging, pointed tail. bica kol.el 'scorpion rat'; rebus: bica 'iron sand ore'; kol.el 'smithy' (Ko.) (m022, Text 1194; m0146)



Two uniquely ligatured glyphs (together with a ligatured glyph) Leaf glyph also gets ligatured to a mountain-summit glyph

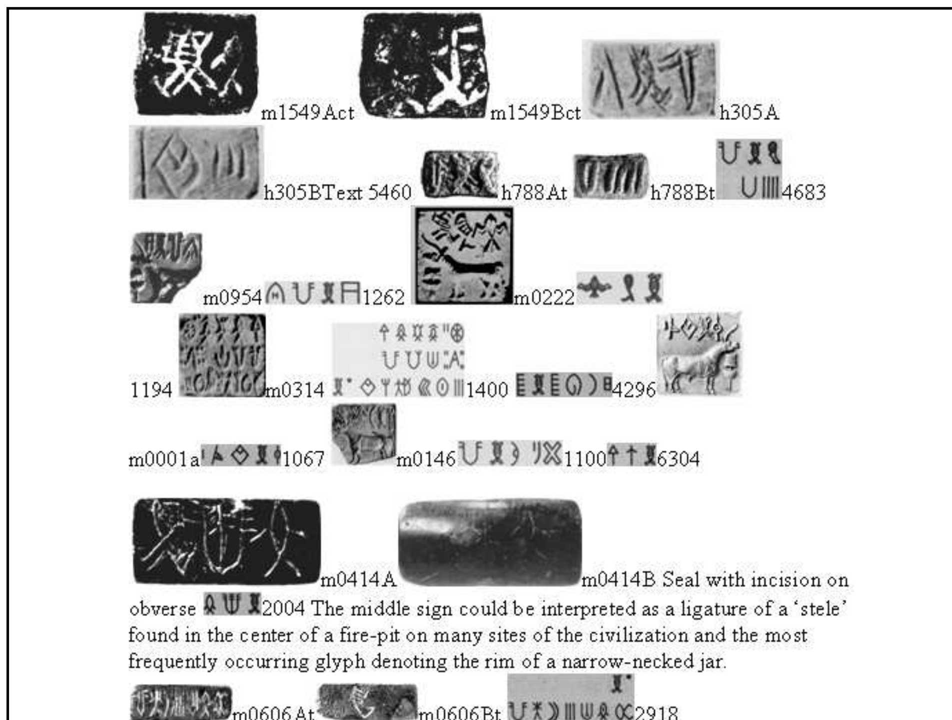
Ligature is a characteristic orthographic feature of the writing system. Occam's razor ! Achieving economy of space to provide space for the field symbol.





The ligaturing pattern is extended further in Sign 418: Sign 15 is further ligatured with a harrow (Sign 171) and oval (Sign 374).

- One glyph, the bandicoot depicts: **kole.l** = smithy, temple in Kota village (Ko.); the second glyph, the leaf depicts: pattar 'leaf'; rebus: **pattar-ai** community; guild as of workmen (Ta.); pattar merchants; perh. vartaka (Skt.) Hence, perhaps, the unique ligaturing device used. If the ligature is a variant depiction of ears, the lexeme evoked by the unique ligaturing device is: karṇaka, kanka 'ear'; rebus: khanaka 'miner' (Skt.); kan- 'copper' (Ta.)
- Substantive: **sund** 'pit (furnace)'; sum, sumbh a mine, a pit, the opening into a mine, the shaft of a mine; sum bhugak the entrance to a mine, pit's mouth (Santali). suṇḍi a semi-hinduised aboriginal caste; this caste are the distillers and liquor sellers; suṇḍi gadi a liquor shop (Santali) cuṇḍ to boil away (Ko.); suṇḍu to evaporate (Ka.); cuṇḍu to be evaporated or dried up (Te.); śuṇṭhi to become dry (Skt.)(DED 2662).
- Glyphs: sūnd gaṭ knot of hair at back (Go.); cundī the hairtail as worn by men (Kur.)(DEDR 2670). m0309 depicts a person seated on a tree branch, wearing a hair-bun (knot of hair at the back).
- śuṇḍ = trunk of elephant (Skt.); **suṇḍa** musk-rat (Ka.)(DEDR 2661)]. śuṇḍi-mūṣikā, śuṇḍa-mūṣikā musk-rat (Skt.)(CDIAL 12517). A variant of Sign 51 shows a seated rat as seen from its back.



h305A h305B Text 5460

h703At h703Bt 4595

m1549Act m1549Bct h305A

h305BText 5460 h788At h788Bt

4683

m0954 1262 m0222 1194 m0314

1400 4296 m0001a 1067

m0146 1100 6304

Banawali 17, Text 9201 Find spot: “The plan of ‘palatial building’ rectangular in shape (52 X 46 m) with eleven units of rooms…The discovery of a tiger seal from the sitting room and a few others from the house and its vicinity, weights of chert, and lapis lazuli beads and deluxe Harappan pottery indicate that the house belonged to a prominent merchant.” (loc.cit. VK Agnihotri, 2005, *Indian History*, Delhi, Allied Publishers, p. A-60)

kol ‘tiger’ (Santali); kollan ‘blacksmith’ (Ta.) kod. ‘horn’; kod. ‘artisan’s workshop’

கோடு kōṭu : (page 1180)
3. [K. *kōḍu*.] Tusk; யானை பன்றிகளின் தந்தம். மத்த யானையின் கோடும் (தேவா. 39, 1). 4. **Horn;** விலங்கின் கொம்பு. கோட்டிடை யாடினை கூத்து (திவ். இயற். திருவிருத். 21).
[M. *kōṭṭa*.] Stronghold, fortified place

கொல்லன் **kollaṉ**
, *n*. < கொல் ². [M. *kollan*.] Blacksmith; கருமான் .
மென்றோன் மிதியுலைக்
கொல்லன் (பெரும்பாண் . 207).



kōḍel bandicoot (Pa.) [**koḍel** = rat (Go.)] Rebus: **kole.l** = smithy, temple in Kota village (Ko.)

urseal15 A scorpion (?or, some seated animal seen from the back) is seen as the first sign from left. 9845 Ur Seal impression; UPenn; steatite; bull below a scorpion; dia. 2.4cm.; Gadd, PBA 18 (1932), p. 13, Pl. III, no. 15; Legrain, MJ (1929), p. 306, pl. XLI, no. 119; found at Ur in the cemetery area, in a ruined grave .9 metres from the surface, together with a pair of gold ear-rings of the double-crescent type and long beads of steatite and carnelian, two of gilt copper, and others of lapis-lazuli, carnelian, and banded sard. The first sign to the left has the form of a flower or perhaps an animal's skin with curly tail; there is a round spot upon the bull's back. [The first sign looks like an animal with a long tail – as seen from the back and may have been the model for the orthography of Sign 51 as noted in Mahadevan corpus]. "...the most remarkable sign being the first one to the left (in the impression) having the form of a flower or perhaps an animal's skin with curly tail...the round spot upon the bull's back is also curious." (C.J. Gadd, Seals of Ancient Indian Style Found at Ur', in: G.L. Possehl, ed., 1979, *Ancient Cities of the Indus*, Delhi, Vikas Publishing House, p. 119).

pāslo = a nugget of gold or silver having the form of a die (G.) **pasaramu, pasalamu** = an animal, a beast, a brute, quadruped (Te.lex.) Thus, the depiction of animals in epigraphs is related to

smithy, **pasra.**



Kalibangan 058 seal

- **pasra** = a smithy, a place where a blacksmith works; to do a blacksmith's work; *kamar pasrat.hene sen akantalea* = our man has gone to the smithy; pasrao lagao (or ehop) akata = he (the blacksmith) has started his work (Santali); **pan~jāvā ,** **pa~jāvā** = brick kiln (P.); pā~jā kiln (B.); pajāvo (G.)(CDIAL 7686).
- பாசறை[1] **pācaṟai** , *n*. < id. + அறை. 1. Encampment or tent of an invading army; war- camp; பகைமேற்சென்ற படை தங்குமிடம். மாறு கொள்வேந்தர் பாசறையோர்க்கே (பதிற்றுப். 83, 9). 2. Bushy cave, cavern; பசிய இலைய செறிந்த முழை. மரகதப் பாசறை . . . பணிமாமணி திகழும் (தஞ்சைவா. 130).





90. Molded tablet. (Kenoyer)

Plano convex molded tablet showing a female battling two tigers and standing above an elephant. A single Indus script depicting a spoked wheel is above the head of the deity.

S. *vāraṇu* 'to shut, forbid' (CDIAL 11553) Rebus: **bharat** (5 copper, 4 zinc and 1 tin)(P.) **bharan** or **toul** alloy of brass or zinc and bronze. (B.)

On the reverse (89), an individual is spearing a water buffalo with one foot pressing the head down and one arm holding the tip of a horn. A gharial [lizard?] is depicted above the sacrifice scene and a figure seated in yogic position, wearing a horned headdress, looks on. The horned headdress has a branch with three prongs or leaves emerging from the center.

Material: terra cotta **Dimensions:** 3.91 length, 1.5 to 1.62 cm width Harappa, Lot 4651-01 **Harappa Museum,** H95-2486 Meadow and Kenoyer 1997



191





- **kolhe** (iron-smelter; **kolhuyo**, jackal)
- **kol, kollan-, kollar** = blacksmith (Ta.lex.)
- **kol** 'to kill' (Ta.)
- **sal** 'bos gaurus', bison; rebus: **sal** 'workshop' (Santali)
- kamaḍha 'penance'; rebus: kampaṭṭam 'mint' (Ta.) *kūtī* = bunch of twigs (Skt.) **kuṭhi** 'smelting furnace' (Santali)
- mangar 'crocodile' (Santali); rebus: kaulo mengro 'blacksmith' (Gypsy)

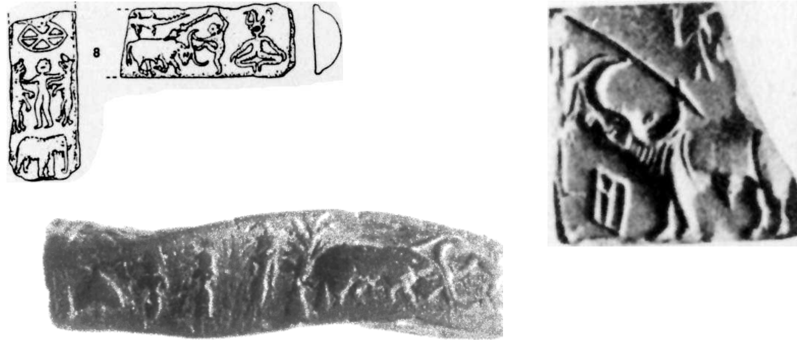
kolsa = to kick the foot forward, the foot to come into contact with anything when walking or running; **kolsa pasirkedan** = I kicked it over (Santali.lex.)
mēṛsa = v.a. toss, kick with the foot, hit with the tail (Santali.lex.)
me~ṛhe~t iron; ispat m. = steel; dul m. = cast iron; kolhe m. iron manufactured by the Kolhes (Santali); meṛed (Mun.d.ari); meḍ (Ho.)(Santali.lex.Bodding)

Harappa Museum, H95-2486 Meadow and Kenoyer 1997

192

kick [me_r.sa = v.a. toss, kick with the foot, hit with the tail (Santali.lex.)] and spear (kol 'kill' (Ta.) a bovine; sal 'bison, *bos gaurus*'; rebus: kol 'smithy'; sal 'workshop'; meḍ 'iron' (Mu.)

- Pict.100, m1430c, 9.08 (Kenoyer)



gummaṭa cupola, dome (Ka.); rebus: **kumpaṭi** = chafing dish (Te.)





S. *vāraṇu* 'to shut, forbid' (CDIAL 11553) Rebus: **bharat** (5 copper, 4 zinc and 1 tin)(P.) **bharan** or **toul** alloy of brass or zinc and bronze. (B.)



<aRa> {V2} ``to stop, to ^prevent, to hinder''. @0423. #1431.

- Rebus: er-r-a = red; eraka = copper (Ka.) **erka** = ekke (Tbh. of arka) aka (Tbh. of arka) copper (metal); crystal (Ka.lex.) agasa_le, agasa_li, agasa_lava_d.u = a goldsmith (Te.lex.)
  - **era, er-a** = eraka = ?nave; erako_lu = the iron axle of a carriage (Ka.M.); cf. irasu (Ka.lex.) [Note Sign 391 and its ligatures Signs 392 and 393 may connote a spoked-wheel, nave of the wheel through which the axle passes; cf. **ara_,** spoke] **eraka, era, er-a =** syn. **erka,** copper, weapons.
- **erka = ekke** (Tbh. of **arka**) **aka** (Tbh. of **arka**) **copper (metal);** crystal (Ka.lex.) cf. eruvai = copper (Ta.lex.) **eraka, er-aka** = any metal infusion (Ka.Tu.); **erako** molten cast (Tu.lex.)

eraka, hero = a messenger; a spy (G.lex.) *heraka* = spy (Skt.); **er** to look at or for (Pkt.); **er uk-** to play 'peeping tom' (Ko.)

m0478B tablet *erga* = act of clearing jungle (Kui) [Note image showing two men carrying uprooted trees].

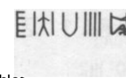
Equivalent glyph: erā = claws of an animal that can do no harm (G.)

- *era* female, applied to women only, and generally as a mark of respect, wife; hopon era a daughter; era hopon a man's family; manjhi era the village chief's wife; gosae era a female Santal deity; buḍhi era an old woman; era uru wife and children; nabi era a prophetess; diku era a Hindu woman (Santali)

The rimmed jar next to the tiger with turned head has a lid. The composition glyph is aduru kan.d.a kanka 'native metal fire-altar of miner, khanaka'

^ dāṭo a plug, a cork, a stopple (G.); dhātu 'mineral' (Vedic)

ḍaren, aḍaren cover, lid (Santali); rebus: aduru 'native metal' (Ka.)



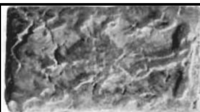
Text 2815 m0480 tablet

gaṇḍra = tree trunk (Kuwi); kaṇḍa = bough (Pali); rebus: kaṇḍ 'fire-altar' (Santali)

Spy on the tree branch

Slide 185 Molded terracotta tablet (H2001-5075/2922-01)(Kenoyer) Reverse shows the same scene above elephant of a woman grappling with two tigers (jackals)





H172b, Stone sculpture of monitor lizard (Dholavira), m0301





- ***a~s*** *= scales of fish (Santali); rebus: aya = iron (G.);* ***ayah****,* ***ayas*** *= metal (Skt.)*
- *kuduru* = lizard (Santali)
- Rebus: **kuduru =** a goldsmith's portable furnace; **kuduḷḷu** (pl.) (Te.lex.) *kudru* top of fireplace (Kuwi)(DEDR 1709).



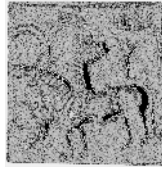
- m1187
- *kudur* 'a wall' (Ka.)





- This is a frequently occurring pair of signs: Sign 342 (164), Sign 48 (114); the pair occurs als on 13 copper tablets together with the lizard glyph as on h172b copper tablet
- Sign 48: baraḍo = spine, the backbone, back (G.)
- Sign 45*:* bharaḍo 'devotee of S'iva' (G.)
- baradh 'bull' (G.); baddi (Nahali)
- Rebus: **baraḍo, vardhaka** 'carpenter, mason' (Santali. Skt.)






M1170 Sign 176: Comb **kangha** (IL 1333) ka~gherā comb-maker (H.)
m1395A, m295 three entwined tigers

kolom 'three' (Mu.); kol 'tiger' (Santali) *kolom* = a reed, a reed-pen (B.); *qalam* (Assamese.Hindi); *kolma hoṛo* = a variety of the paddy plant (Desi)(Santali.lex.Bodding) *kolom baba* = the threshed or unthreshed paddy on the threshing floor; *kolom-ba_rum* = the weight a man carries in taking the paddy from the threshing floor to his house; kolom = a threshing floor (Mundari) Rebus: **kolime** = furnace (Ka.)








- Signs 54, 55, 56, 57

- Spider **kan:garā** (Tir.) gan:ges. (Ash.)
- *Vikalpa: khā~g* (H.) *khāg* (B.H.Ku.N.); *khagga* = rhinoceros (Pkt.)
- **kan:g** portable brazier (B.); kā~guru, ka~gar (Ka.); kan:gar = large brazier (K.) kan:g = brazier, fireplace (K.)(IL 1332)



m1405Bt Pict-48 A tiger and a rhinoceros in file [*kol* 'tiger'; Vikalpa rebus: **kolhe** 'smelters of iron'. **badhia** 'castrated boar' (Santali); *baḍhi* 'a caste who work both in iron and wood' (Santali)]

Three winged-tigers (lions?) on sanchi torana

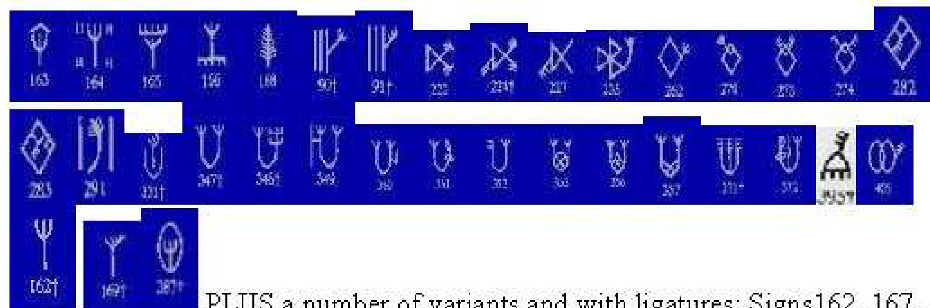


Lion capitals as decoration of the southern gateway of the Great Stupa at Sanchi, Madhya Pradesh. General outer view, c.50-25 BCE, sandstone. Photograph: courtesy A. Kamphorst



Panel with a depiction of a stupa with surrounding railing, gateway and pillars with lion capitals. Amaravati, Andhra Pradesh, 3rd-4th century, limestone. Government Museum, Chennai. Photograph: courtesy Soham Pablo

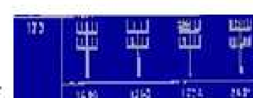


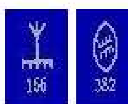


PLUS a number of variants and with ligatures: Signs162, 167, 169, 387,389 +variants; Ligatures: Signs163, 166-6, 168, 90, 91,223,224,227,235.262,270,273,274, 282,283,291,331, 347-352, 355-357,371,372, 388-390,395,405 **kolom** = cutting, graft; to graft, engraft, prune; kolom dare kana = it is a grafted tree; kolom ul = grafted mango; kolom gocena = the cutting has died; kolom kat.hi hor.o = a certain variety of the paddy plant (Santali); Rebus: **kolime**= furnace (Ka.)



  (26) **Sign 15 (126)** 

V176 Ligatured signs:  V173 

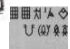
Signs 176, 165, 166, 382 *kām.sako* = a large-sized comb (G.lex.) Alternative decoding of Sign 176: Comb **kangha** (IL 1333) *ka~gherā* comb-maker (H.) **kan:g** = brazier, fireplace (K.)(IL 1332) Portable brazier

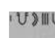
Sign 256 Sign 261 Sign 266 Sign 256 also occurs on the Dholavira Sign board together with Sign 261.

Sign 256:

pacar = a wedge driven ino a wooden pin, wedge etc. to tighten it **|** (Santali.lex.)
pacri = an enclosing wall, to enclose by a wall (Santali.lex.)
pacr.ao = to thrown down, to overcome (Santali.lex.)
pasra = a smithy, place where a black-smith works, to work as a blacksmith; kamar pasra = a smithy; pasrao lagao akata se ban:? Has the blacksmith begun to work? pasraedae = the blacksmith is at his work (Santali.lex.)
Sign 261: kolle, kolli = corner (Ka.); **kolli** corner (Ma.) **kole, kuli** = a small space set apart in a corner of the house for fowls (Santali) Rebus: kol 'smithy' (Ta.)








Cylinder seal impression, Tell Asmar (After Frankfort, 'The Indian Civilization and the near East', *Annual Bibliography of Indian Archaeology*, 1932), Kalibangan033 (seal), m052, m0573 (tablets), pict-49 (seal) 1429c tablet
iṭan:kar = alligator (Ta.); **ḍān:ro** 'blacksmith' (N.) *pasaramu, pasalamu* = an animal, a beast, a brute, quadruped (Te.lex.) Thus, the depiction of animals in epigraphs is related to, rebus: **pasra** = smithy (Santali)
kaula mengro 'smith' (Gypsy); kolli 'fish'; mangar 'crocodile' (Santali)
*pisera_* a small deer brown above and black below (H.)(CDIAL 8365).
ḍ*ān:gra* = wooden trough or manger sufficient to feed one animal (Mundari). *iṭan:kārṛi* = a capacity measure (Ma.) Rebus: **ḍhan:gar** 'blacksmith' (Bi.)



- The bulls standing face to face: **samna samni** = face to face (Santali); rebus: **samanom** 'gold' (Santali)
- **baddī** = ox (Nahali); **baḍhi** = worker in wood and metal (Santali)

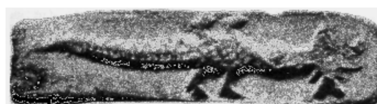
Faience tablet. This unique mold-made faience tablet (H2000-4483/2342-01) was found in the eroded levels west of the tablet workshop in Trench 54. On one side is a short inscription under a rectangular box filled with 24 dots (or one pairs of 12 dots). The reverse has a narrative scene with two bulls fighting under a thorny tree.

Alligator, fishes
m1428B, m1429C





Rakhigarhi, alligator or lizard?
Har606 (Kenoyer), m1429c, m410, h172B, monitor lizard in the round (Dholavira); m482A,B; h599D kakṛa ‘common lizard’ (Santali) kā~gar ‘portable brazier’ (K.) iṭankar ‘crocodile’ (Ta.); ḍangar ‘blacksmith’ (H.)



ḍān:grā = a wooden trough just enough to feed one animal. cf. **iḍankaṛi** = a measure of capacity, 20 **iḍankaṛi** make a paṟṟa (Ma.lex.)





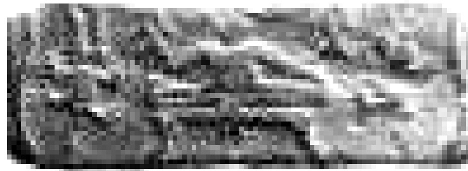












One side of a triangular terracotta tablet (Md 013); surface find at Mohenjo-daro in 1936. Dept. of Eastern Art, Ashmolean Museum, Oxford.

kamaḍha, kamaṭha, kamaḍhaka, kamaḍhaga, kamaḍhaya = a type of penance (Pkt.lex.)

kamaṭamu, kammaṭamu = a portable furnace for melting precious metals; kammaṭi_d.u = a goldsmith, a silversmith (Te.lex.) ka~pr.auṭ jeweller's crucible made of rags and clay (Bi.); kampaṭṭam coinage, coin, mint (Ta.)

kamaṭhāyo = a learned carpenter or mason, working on scientific principles; kamaṭhāṇa [cf. karma, kām, business + sthāna, thāṇam, a place fr. Skt. sthā to stand] arrangement of one's business; putting into order or managing one's business (G.lex.)

mangar 'crocodile' (Santali); rebus: kaulo mengro 'blacksmith' (Gypsy)
kolli 'fish' (Te.); kol 'smithy, forge, pancaloha' (Ta.)

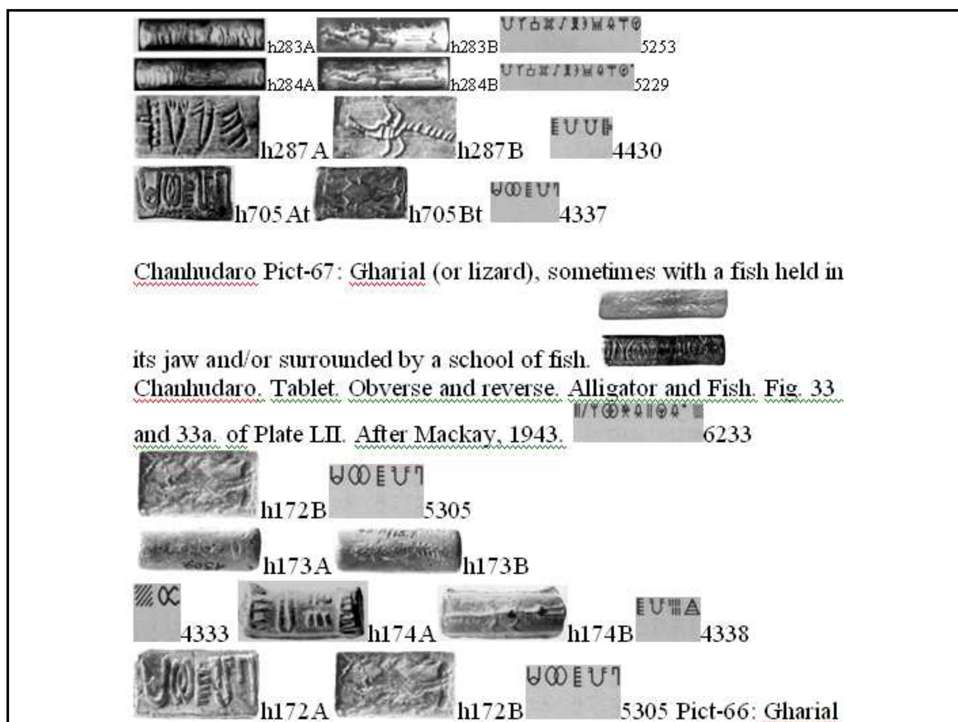
Slide 207 Tablet with inscription. Twisted terra cotta tablet (H2000-4441/2102-464) with a mold-made inscription and narrative motif from the Trench 54 area. In the center is the depiction of what is possibly a deity with a horned headdress in so-called yogic position seated on a stool under an arch.

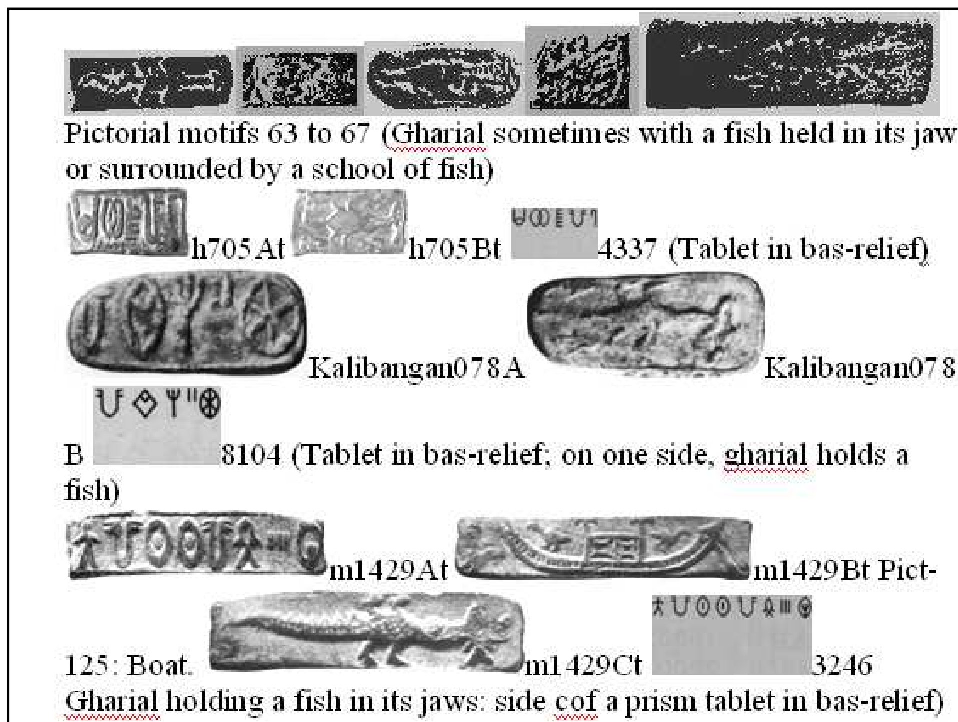


Harappa. Two tablets. Seated figure or deity with reed house or shrine at one side. Left: H95-2524; Right: H95-2487.




m0410
2133Pict-64: Gharial snatching, with its snout, the fin of a fish.
m1429Ct
3246 Gharial holding a fish in its jaws
m1223
2045
m1429At
m1429Bt Pict-125: Boat.
m0482At
m0482Bt
1620 Pict-65: Gharial, sometimes with a fish held in its jaw and/or surrounded by a school of fish.
Kalibangan078A
Kalibangan078B
8104 [Tablet in bas-relief; on one side, lizard (gharial?) holds a fish]
m0292 Gharial (or lizard)
1361
h599A
h599D
5076


h283A
h283B
5253
h284A
h284B
5229
h287A
h287B
4430
h705At
h705Bt
4337
Chanhudaro Pict-67: Gharial (or lizard), sometimes with a fish held in its jaw and/or surrounded by a school of fish.
Chanhudaro. Tablet. Obverse and reverse. Alligator and Fish. Fig. 33 and 33a. of Plate LII. After Mackay, 1943.
6233
h172B
5305
h173A
h173B
4333
h174A
h174B
4338
h172A
h172B
5305 Pict-66: Gharial


Pictorial motifs 63 to 67 (Gharial sometimes with a fish held in its jaw or surrounded by a school of fish)
h705At h705Bt 4337 (Tablet in bas-relief) Kalibangan078A Kalibangan078B 8104 (Tablet in bas-relief; on one side, gharial holds a fish)
m1429At m1429Bt Pict-125: Boat. m1429Ct 3246 Gharial holding a fish in its jaws: side cof a prism tablet in bas-relief)



Mohenjo-daro. Silver seal (After Mackay 1938, vol. 2, Pl. XC,1; XCVI, 520). Two silver seals at Mohenjo-daro, two copper seals at Lothal and at Ras al-Junayz in Oman are rare uses of metal for making seals.

Ras-al-Junayz. Copper seal.





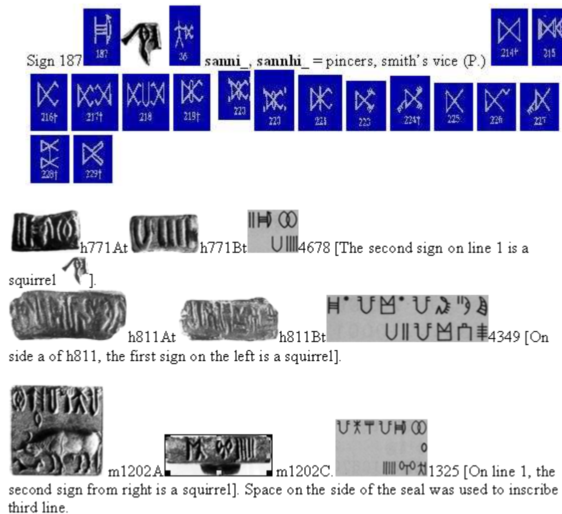
Eight inscribed copper tablets were found at Harappa and all were made with raised script, a technique quite different from the one used at Mohenjo-daro for flat copper tablets with many duplicates. Harappa. Raised script. H94-2198. [After Fig. 4.14 in JM Kenoyer, 1998]. The duplicates occur on steatite and faience tablets at Harappa; these may have represented **a commodity or a value.** [cf. JM Kenoyer, 1998, p. 74].

Many inscriptions from many sites
(After Asko Parpola ppt) Uniformity over the civilization area

Site	Inscriptions
HARAPPA PUNJAB PAKISTAN	[illegible]
MOHENJO-DARO SINDH PAKISTAN	[illegible]
CHANHU-DARO SINDH PAKISTAN	[illegible]
ALLAH-DINO SINDH PAKISTAN	[illegible]
LOTHAL GUJARAT INDIA	[illegible]
PABUMATH GUJARAT INDIA	[illegible]
DESALPUR GUJARAT INDIA	[illegible]
KALIBANGAN RAJASTHAN INDIA	[illegible]
HULAS UTTAR PRADESH INDIA	[illegible]
GONUR TURKMENISTAN	[illegible]
KISH IRAQ	[illegible]



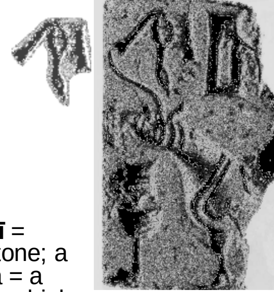
Nindowari-damb01 Seal. The sign that appears close to the horn of the bull is a squirrel. (cf. Asko Parpola, 1994, p. 103). Other examples of squirrel hieroglyph, allographs



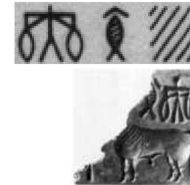
tsāni, tsānye = squirrel (Kon.lex.) Rebus: **sāna 'grindstone' (Te.) canil, caṇil** (Tu.), aṇṇal (Ma.), aṇṇān (Ma.), aṇil, aṇilam (Ta.)[Tol. po. 561] sanjāb = the grey squirrel (U.Pers.)

sāngi 'squirrel, ladder' (P.) saga 'kinsman' (G.)

Why hieroglyphs? Harappa Seal showing palm squirrel as sign (h 419)



- **tsāni, tsānye** = squirrel (Kon.lex.) Allograph: **sannī, sannhī** = pincers, smith's vice (P.) **śāne, sāṇe**, sāṇekallu = a grind-stone; a whitstone; sāṇe pattuni = to grind, to sharpen (Tu.lex.) sāna = a grindstone, a whetsone, a hone; a kind of fine sandstone on which sandal paste is prepared; sānakatti = a kind of sword; sānapat.t.u = to grind, as a knife, etc. to cut and polish as a precious stone (Te.lex.) **san.g** = a stone; akīk or carnelian stone (P.) a chisel for cutting metals
- Hieroglyphs include pictorial motifs and also standardised signs or sign variants
- Hieroglyphs also include orthographic connotations (such as tiger or antelope looking back: krammara 'turn back'; rebus: kamar 'smith'
- Short noun phrases
- Use of rebus principle to represent phonetic equivalents (glyphs vis-à-vis substantives related to repertoire of miners and metalsmiths).
- e.g., H416 seal showing water-carrier glyph kuṭi 'water-carrier'(Te.); rebus: kuṭhi 'smelter' (Santali) Text 4059



Lothal042 m0188 1287 m0229 3075

m0328 m0429 Text 2862 Kalibangan020 8047

h081 5063 m0995 Chanhudaro21a 6209 The second sign is a ligature: carrying pole with slings + rim of pot: *ka_ca* + *kan.d.kankha* (Substantive: iron spit + furnace)

Chanhudaro Seal obverse and reverse. The 'water-carrier' and X signs of this so-called Jhukar culture seal are comparable to other inscriptions. Fig. 3 and 3a of Plate L. After Mackay, 1943. 6120 Kalibangan049 8013

m0741

2421 5123 9851 Telloh **9842 Ur**

[Pierre de talc. Louvre, AO 9036. P. Amiet, Bas-relliefs imaginaries de l'Orient ancien, Paris, 1973, p. 94, no. 274…ils proviendrait de Tello, l'ancienne Girsu, une des cites de l'Etat sumerien de Lagash. Musee National De Arts Asiatiques Guimet, 1988-1989, *Les cites oubliees de l'Indus Archeologie du Pakistan*.]

m1405Bt Pict-48 A tiger and a rhinoceros in file

m1405At Pict-97: Person standing at the center pointing with his right hand at a bison facing a trough, and with his left hand pointing to the sign

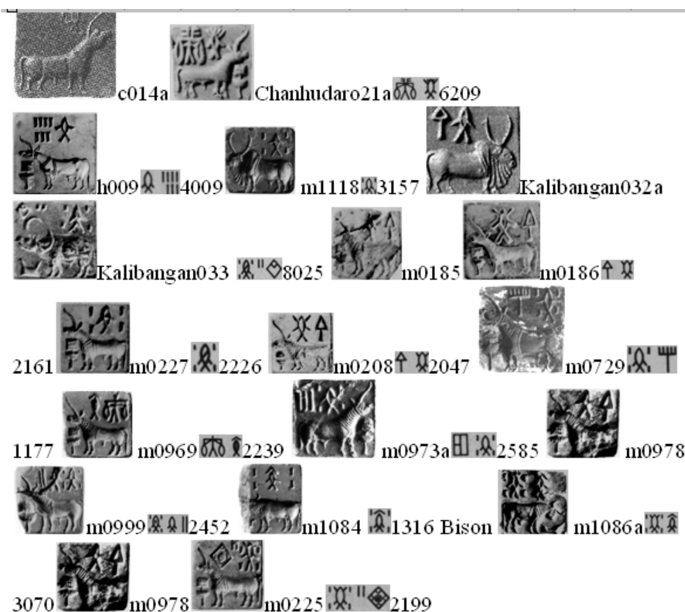
Sign 15 is a ligature of Sign 12 and Sign 342

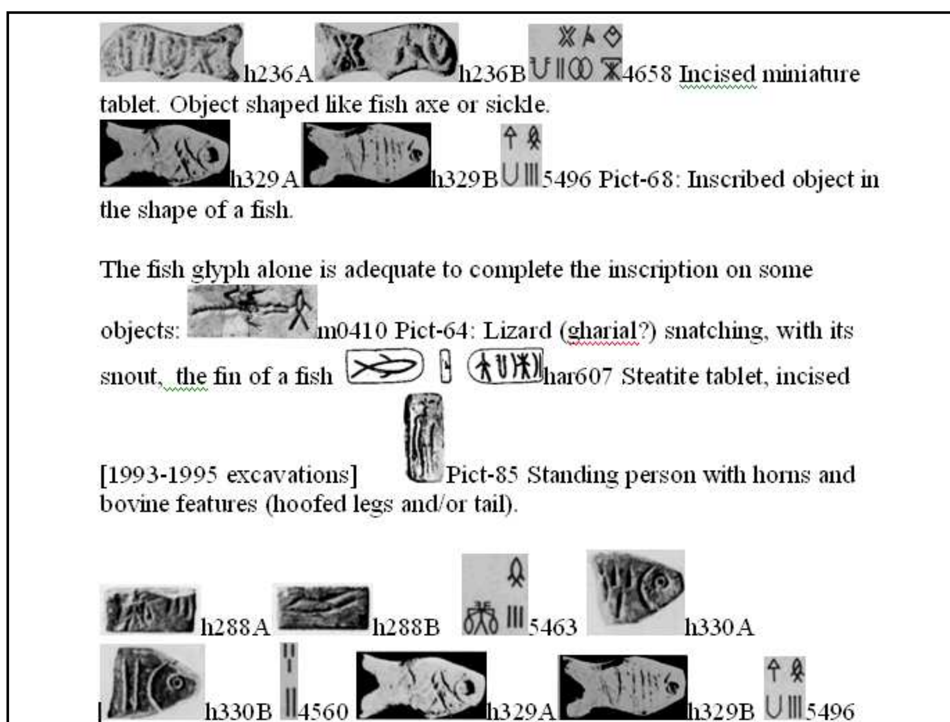
h073 4617 [An orthographic representation of a water-carrier].

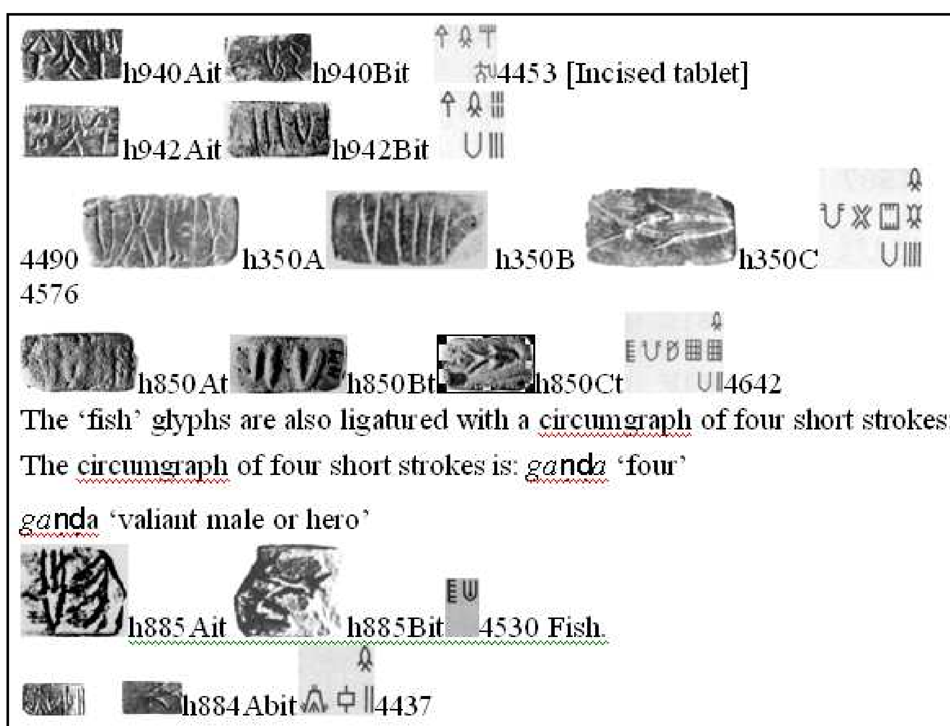
m0838 2368 m0215 3081 m0741 2421

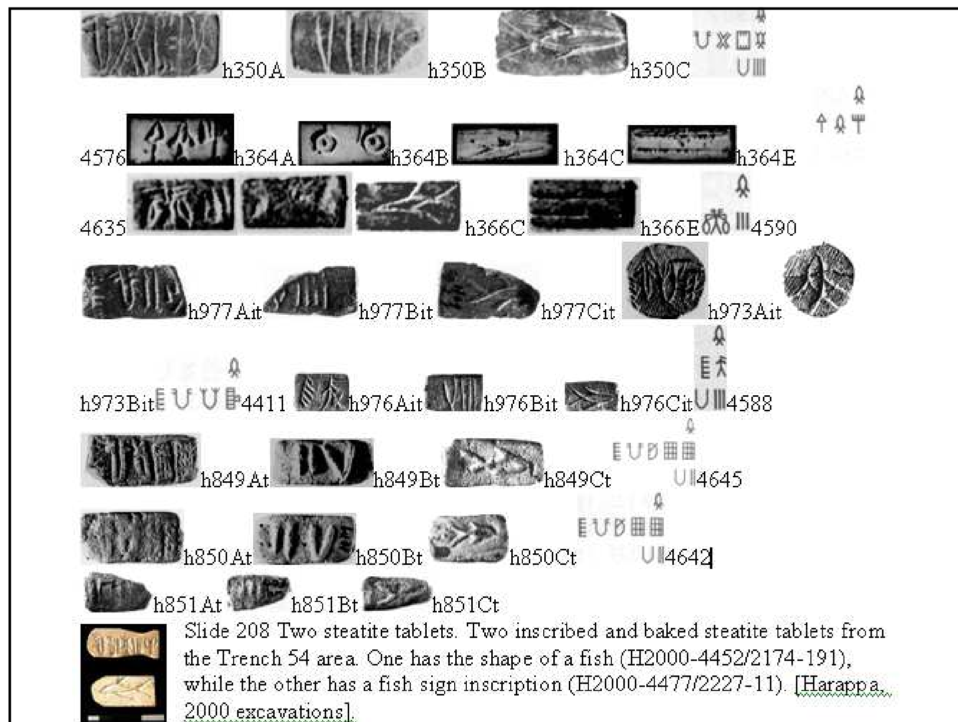
m0969 2239

The following examples show the dominant use of the fish glyph together with another sign and/or a ligature:




h236A h236B 4658 Incised miniature tablet. Object shaped like fish axe or sickle.
h329A h329B 5496 Pict-68: Inscribed object in the shape of a fish.
The fish glyph alone is adequate to complete the inscription on some objects: m0410 Pict-64: Lizard (gharial?) snatching, with its snout, the fin of a fish har607 Steatite tablet, incised
[1993-1995 excavations] Pict-85 Standing person with horns and bovine features (hoofed legs and/or tail).
h288A h288B 5463 h330A
h330B 4560 h329A h329B 5496


h940Ait h940Bit 4453 [Incised tablet]
h942Ait h942Bit
4490 h350A h350B h350C
4576
h850At h850Bt h850Ct 4642
The 'fish' glyphs are also ligatured with a circumgraph of four short strokes:
The circumgraph of four short strokes is: ganda 'four'
ganda 'valiant male or hero'
h885Ait h885Bit 4530 Fish.
h884Abit 4437



Slide 208 Two steatite tablets. Two inscribed and baked steatite tablets from the Trench 54 area. One has the shape of a fish (H2000-4452/2174-191), while the other has a fish sign inscription (H2000-4477/2227-11). [Harappa 2000 excavations].

59 60 61 62 65 66 67 68 69 70 71

72 73 74 75 V059 V060 V067 V068

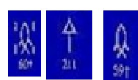
V069 V070 V072 V073

V074 63 64 76 77 78 79 80 81

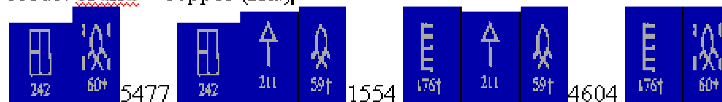
V076 V078 V081

59 67 This is a frequent pairing (about 60 occurrences) of 'fish' signs.

59 59 The 'fish' sign also gets duplicated in pairs.



In an incisive, contextual analysis of the corpus of inscriptions containing the 'fish' sign, Asko Parpola demonstrates that the sign sequences (Sign 211 and Sign 59) are functionally similar to the ligatured sign (fish enclosed in four circumgraphs: Sign 60) (cf. Asko Parpola, Asko Parpola, 1994, *Deciphering the Indus Script*, Cambridge Univ. Press, Fig. 6.6, p.94) **er-aka** 'upraised arm' (Ta.); rebus: **eraka** = copper (Ka.)



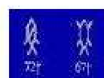
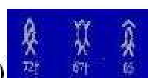
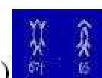
5477 1554 4604 5477 Twenty signs occur with the circumgraph of four short strokes; many of these 20 signs occur as

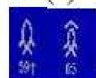
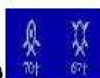


final motifs of the text, functioning similar to the 'jar' sign which terminates many texts. The circumgraph may, therefore, be the terminating 'word' of the text, functioning similar to the 'arrow' sign. The 'arrow' sign terminates 184 inscriptions (out of a total of 227 inscriptions in which the 'arrow' occurs).

Sign 60Thus, the circumgraphed 'fish' sign 60 can be read as: **bed_a gannda** (rebus: **beda** 'hearth', or ayo 'fish'; rebus: ayas 'metal' kand 'furnace'), i.e. hearth and furnace. Cf. *kan.t.am* 'arrow' (Ta.) rebus: a quantity (of metal) as in ayaskānda (Pa_n.) The word for a 'set of four' is: ganda (Santali) Sign 67 *ken.t.ai* carp (Ta.); gande = a fish (Te.lex.) The glyphs of ligatured fin: **cett ai** fin (Ta.); catt upa wing (Te.)(DEDR 2764) Rebus, substantive: **ke~re~** bell-metal, brass.

[The frequently occurring pairs of 'fish' ligatures are as follows (frequencies are shown in parenthesis):

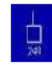
Signs 72, 67 (6) Signs 72, 67, 65 (2)Signs 67, 65 (4)

Signs 59, 65 (5)Signs 70, 67 (3)

ko_la_ 'flying fish, exocaetus; garfish, belone (Ta.); ko_la_-mi_n, ko_li needle-fish (Ma.)(DEDR 2241); rebus: **kol** = metal; working in iron (Ta.); kole.l –smithy' (Ko.)(DEDR 2133).

Sign 70 A short stroke within the body of the fish) affixed to the basic 'fish' pictograph.

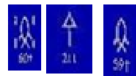
sal stake, spike, splinter, thorn, difficulty (H.); **sal.i_** small thin stick; **sal.iyo** bar, rod, pricker (G.); **s'ol.** reed (Kho.)(CDIAL 12343). **salleha**, **selleha** = splinter (Ka.lex.)
Rebus: **sal** 'workshop' (Santali); **s'a_la** id. (Skt.)
Hence, **sal** + **bed.a** (spike + fish); rebus: **sal** 'workshop'; **bed.a** 'hearth'

 (18)  (20) **Sign 65 (216)**  Copper tablets (16) Sign 65 is a ligatured glyph: **beda hako** = a fish. Rebus: **beda** = hearth (G.) ligatured with a 'lid' glyph. d.aren-mund.i lid of pot; **daren, adaren** to cover up pot with lid (Bond.a); **darai** to cover (Bond.a.Hindi) Rebus: **aduru** 'native metal' (Ka.), i.e. hearth for native metal. Pairing sign Liquid measure: **ran:ku**; rebus: **ran:ku** = tin (Santali)

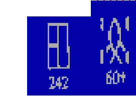
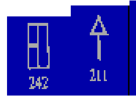
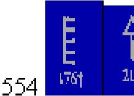
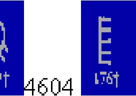
Pairing sign **savatu, savutu, sautu, sotu** = ladle, spoon (Ka.) Rebus: **cavalai** = lead, silver (Ta.) (21) **Sign 72 (188)** Copper tablets (20)

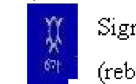
Glyph is a slanting stroke ligatured to 'fish' glyph: **dhāḷiyum** = adj. sloping, inclining; **dhāḷ** = a slope; the inclination of a plane (G.)

Rebus: : **dhāḷako** = a large metal ingot; **dhāḷaki_** = a metal heated and poured into a mould; a solid piece of metal; an ingot (G.) beda hako = a fish; rebus: **beda** = hearth. Thus, Sign 72 denotes a hearth for metal ingot.

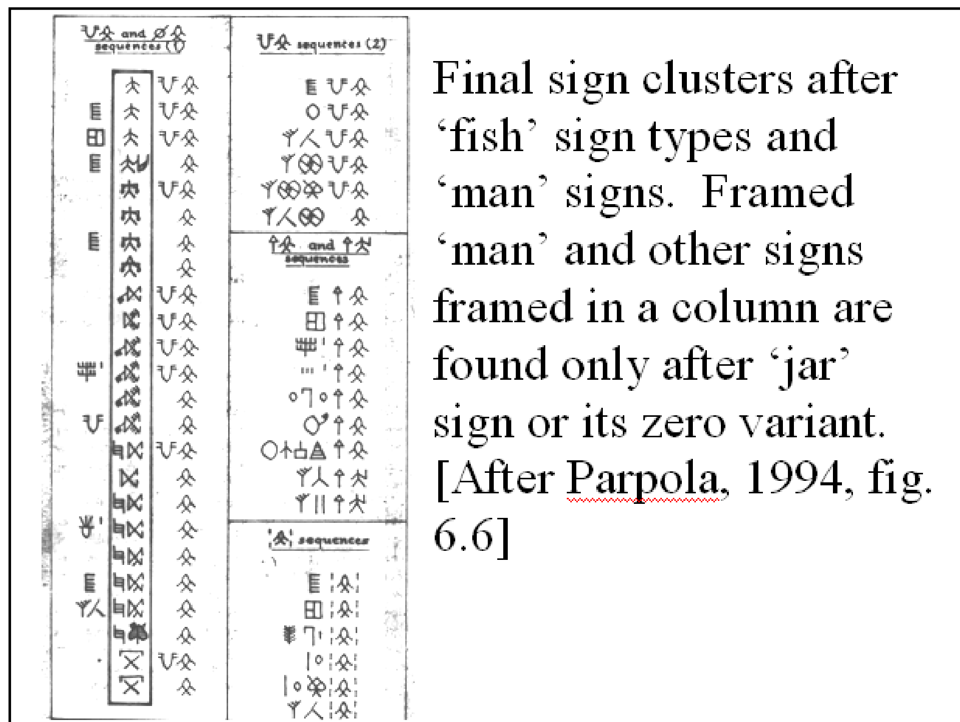


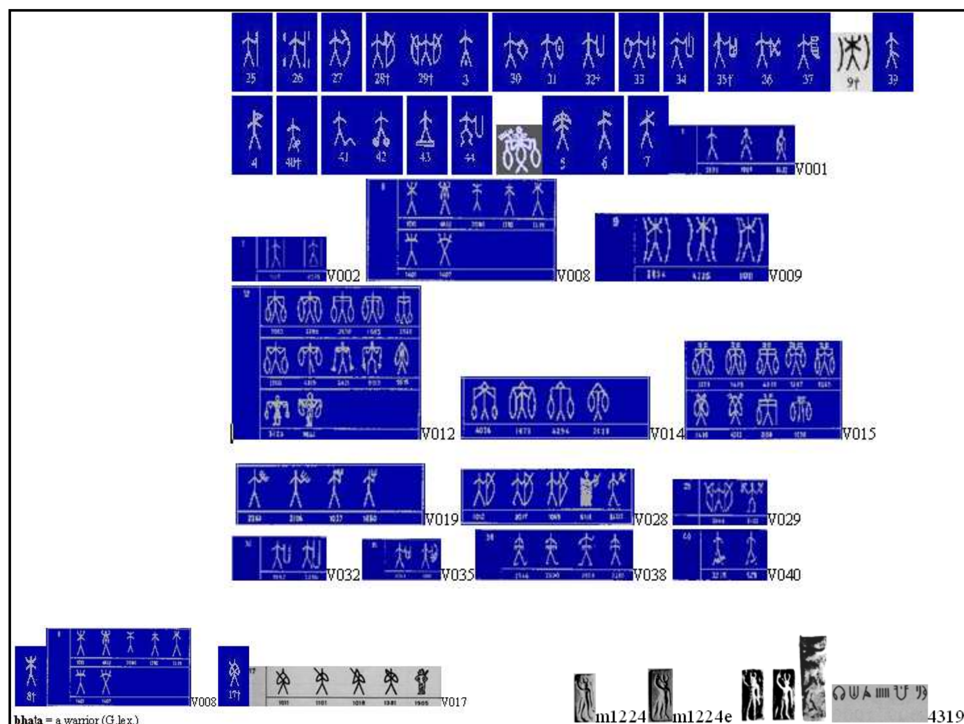
four In an incisive, contextual analysis of the corpus of inscriptions containing the 'fish' sign, Asko Parpola demonstrates that the sign sequences (Sign 211 and Sign 59) are functionally similar to the ligatured sign (fish enclosed in circumgraphs: Sign 60) (cf. Asko Parpola, Asko Parpola, 1994, *Deciphering the Indus Script*, Cambridge Univ. Press, Fig. 6.6, p.94) **er-aka** 'upraised arm' (Ta.); rebus: **eraka** = copper (Ka.)

5477 1554 4604 5477 Twenty signs occur with the circumgraph of four short strokes; many of these 20 signs occur as final motifs of the text, functioning similar to the 'jar' sign which terminates many texts. The circumgraph may, therefore, be the terminating 'word' of the text, functioning similar to the 'arrow' sign. The 'arrow' sign terminates 184 inscriptions (out of a total of 227 inscriptions in which the 'arrow' occurs).



Sign 60Thus, the circumgraphed 'fish' sign 60 can be read as: **bed_a gaṇḍa** (rebus: **beda** 'hearth', or ayo 'fish'; rebus: ayas 'metal' **kaṇḍ** 'furnace'), i.e. hearth and furnace. Cf. *kan.t.am* 'arrow' (Ta.) rebus: a quantity (of metal) as in ayaskāṇḍa (Pa_n.) The word for a 'set of four' is: gaṇḍa (Santali) Sign 67 *ken.t.ai* carp (Ta.); gaṇḍe = a fish (Te.lex.) The glyphs of ligatured fin: **cett ai** fin (Ta.); catt upa wing (Te.)(DEDR 2764) Rebus, substantive: **ke~re~** bell-metal, brass.


Final sign clusters after 'fish' sign types and 'man' signs. Framed 'man' and other signs framed in a column are found only after 'jar' sign or its zero variant. [After Parpola, 1994, fig. 6.6]
sequences (1)
sequences (2)
and
sequences
sequences


V001
V002
V008
V009
V012
V014
V015
V019
V028
V029
V032
V035
V038
V040
V008
V017
m1224
m1224e
4319
bhata = a warrior (G.lex.)

Damb sadat burial vessel: pair of zebu or bos indicus

adar ḍangra ‘zebu, bos indicus’

- native metal (aduru)
- Smith (ḍhangar)





That a trough is shown in front of non-domesticated animals makes the glyphs of the both the trough and the animal, hieroglyphs

M0238 short-horned bull with trough (bison, bos gaurus?)
h088 Indian rhino (boar)





Decorative column on a relief at Aihole, 7th cent.: boar, cross-marked sun, disc on pillar, conch Photo: Sriram Lakshminarayanan http://www.flickr.com/photos/chennaihari/2247732811/



Epigraph on copper plate

veṛhā octopus, said to be found in the Indus (Jaṭki lexicon of A. Jukes, 1900)

m297a: Seal





h1018a: copper plate

L. ***veṛh***, *vehṛ* m. fencing; Mth. *beṛhī* granary; L. *veṛhā*, *vehṛā* enclosure containing many houses; *beṛā* building with a courtyard (WPah.) (CDIAL 12130)

koḍ = artisan's workshop (Kuwi); koḍ 'horn'



1.Finely burnished gold fillet (headband) with holes at both ends to hold a cord. Each end is decorated with a punctuated design of standard device. 42 x 1.4 cm. Mohenjodaro Museum, MM 1366; Marshall 1931: 220.527. Pl. CXVIII, 14 (for punctuated design)

2. Detail of gold fillet with punctuated design of standard device at both ends of the gold fillet. (After Fig. 7.32, Kenoyer, 1998)

PATRAHA MAYURBHANJ PESHAWAR NAGPUR, RAWALPINDI	PUNCH-MARKED COINS
BHAGALPUR AHRAURA SAHAL MIRZAPUR VEMBAVUR	"
THATHARI UJJAIN BHILSA-FIND PATRAHA RAIRH	"
KAUŚĀMBĪ	UNINSCRIBED-INSCRIBED COINS
ERAN	LOCAL COINS
KANAUJ (1) TAXILA (2-3) UJJAYINI (4-5)	"
AYODHYA (1-3) ALMORA (4) UDDEHIKA (5)	"
KUNINDA YAUDHEYA	TRIBAL COINS
SĀTAVĀHANA	COINS

[Pl. 55, Standard symbol on punch-marked coins and on local coins; this is paralleled by the standard device in front of the one-horned bull shown on many inscribed objects with Sarasvati hieroglyphs].



[After Mahadevan. Standard device. Indra dhvaja?].

V326 V327

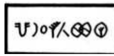
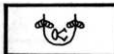
loa = a species of fig tree, ficus glomerata, the fruit of ficus glomerata (Santali.lex.) Vikalpa: kamaṛkom 'ficus' (Santali); rebus: kampaṭṭam 'mint' (Ta.) patra 'leaf' (Skt.); rebus: paṭṭarai 'workshop' (Ta.)

lauha = made of copper or iron (Gr.S'r.); metal, iron (Skt.); lōhakāra = coppersmith, ironsmith (Pali); lōhāra = blacksmith (Pt.); lohal.a (Or.); lōha = metal, esp. copper or bronze (Pali); copper (VS.); loho, lō = metal, ore, iron (Si.)

kamaṭha crab (Skt.)
kamāt.hiyo = archer; **kāmaṭhum** = a bow; ka_mad.i_, ka_mad.um = a chip of bamboo (G.) **ka_maṭhiyo** a bowman; an archer (Skt.lex.)
kamaṛkom = fig leaf (Santali.lex.) **kamarmaṛā** (Has.), **kamaṛkom** (Nag.); the petiole or stalk of a leaf (Mundari.lex.) kamat.ha = fig leaf, religiosa (Skt.)
bat.a = wide-mouthed pot; **bat.a** = kiln (Te.)
kammaṭa = portable furnace (Te.) **kampaṭṭam** coiner, mint (Ta.)

- Allographs of a leaf sign, ligature with crab sign [After Parpola, 1994, fig. 13.15] The archer shown on one copper tablet seems to be equivalent to a glyph on another copper plate -- that of ligatured U (rimless wide-mouthed pot) with leaves and crab's claws.
- The archer shown on one copper tablet seems to be a synonym of the leaves ligatured with crab on another copper tablet since the inscription on the obverse of each of the tablets is identical. [cf. Parpola, 1994, fig. 13.13] This ligatured sign appears on two seals- one from Harappa and another from Lothal. Leaves ligatured with crab is a sign which occurs on these seals and with similar sign sequences. [cf. Parpola, 1994, fig. 13.12]

M1540 copper tablet
Allographs of a leaf sign, ligature with crab sign [After Parpola, 1994, fig. 13.15]

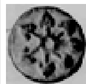
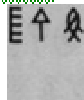





kamaṛkom = fig leaf (Santali.lex.)
kamarmaṛā(Has.), **kamaṛkom** (Nag.); the petiole or stalk of a leaf (Mundari.lex.)
kamāṭhiyo = archer;
kāmaṭhum = a bow;
ka_mad.i_, ka_mad.um = a chip of bamboo (G.) **kāmaṭhiyo** a bowman; an archer (Skt.lex.)

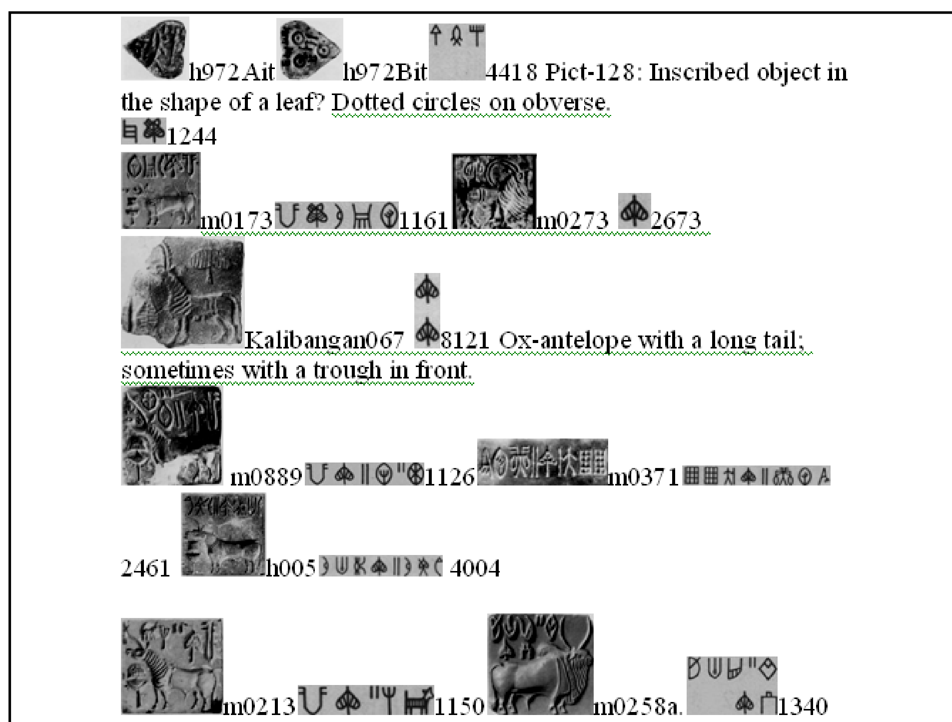


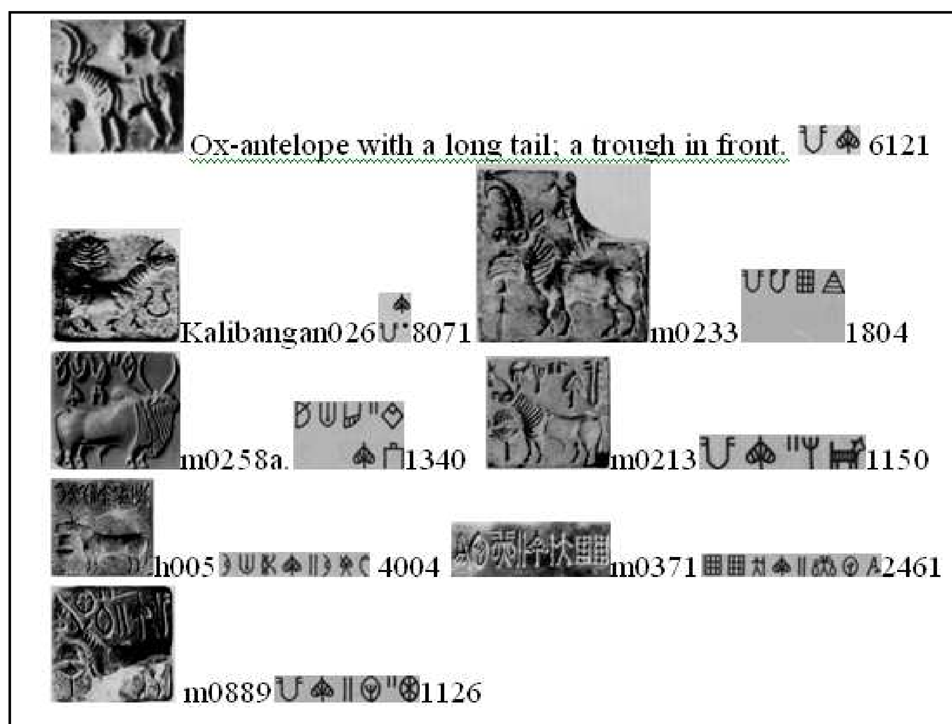


Provenance: 1. Bronze age site, Kalenao near the Turkmeni frontier, North West Afghanistan. *Commentary:* While numerous Indus Valley stamp seals are known (cf. MS 2394), this is the only known cylinder seal (MS 2645) with the hitherto undeciphered Indus Valley script. Furthermore, this is the only known document linking together over land two of the great civilisations of the Old Akkadian period in Mesopotamia and the Indus Valley. Sea-borne trade has been known for a long time, and documented in practical terms by the Norwegian explorer and scientist, Thor Heyerdahl, in his expedition with the reed boat, Tigris, in 1977.

h243B Tablet in bas-relief Pict-78: Rosette of seven pipal (?) leaves. 4664 *lo* 'ficus glomerata'; *lo* 'iron'; *er..u* 'clubs'; Rebus: seven iron clubs. *bakhor.* 'comb'; *bakher* 'homestead'; *d.ol* 'arrow'; *dul* 'cast iron' [cf. Fish signs analysed elsewhere.] *ten:gra hako* ' a species of fish'; *t.an:gi* 'stone chisel' (cast iron chisel?) *eae* 'seven' (Santali); *e_d.u* (Te.); *e_r..u* (Ta.)

2819 Pict-60: Composite animal with the body of an ox and three heads [one each of one-horned bull (looking forward), antelope (looking backward) and bison (looking downwards)] at right; a goat standing on its hindlegs and browsing from a tree at the center.


h972Ait h972Bit 4418 Pict-128: Inscribed object in the shape of a leaf? Dotted circles on obverse.
1244
m0173 1161 m0273 2673
Kalibangan067 8121 Ox-antelope with a long tail; sometimes with a trough in front.
m0889 1126 m0371
2461 h005 4004
m0213 1150 m0258a. 1340


Ox-antelope with a long tail; a trough in front. 6121
Kalibangan026 8071 m0233 1804
m0258a. 1340 m0213 1150
h005 4004 m0371 2461
m0889 1126

salae sapae = untangled, combed out, hair hanging loose (Santali)
h 180A,B tablet
Rahman-dheri01A and B Rhd1:
Two scorpions flanking a frog and a sign T
with two holes on the top, possibly to be tied on a string
barās carpenter's forked instrument (Tu.lex.) **parasu** axe (Pali.Pkt.)
Rebus: **sāla** = workshop (B.)
sapap = arms, tools, implements, instruments, gear; sendra reak sapap = gear for hunting; raj mistri reak sapap = the tools of a mason; kurta rorok reak sapap = the tools with which to sew a coat (Santali)

M0592 double-axe shown on a copper plate, which depicts a double-axe identical to the one unearthed in Sumer, Mesopotamia, ca. 3000 BC
Chanhudaro 23 seal: double-axe shown in front of antelope

sal ‘workshop’ (Santali); **śāla** id. (Skt.); A. *xāl*, *xāli* ‘house, workshop, factory’ (CDIAL 12414)



kuṭi = a slice, a bit, a small piece (Santali.lex.Bodding) Rebus: kuṭhi ‘iron smelter furnace’ (Santali) **kuṭhī** factory (A.)(CDIAL 3546)

sal stake, spike, splinter, thorn, difficulty (H.); **saḷī** small thin stick; **saḷiyo** bar, rod, pricker (G.); ś**oḷ** reed (Kho.)(CDIAL 12343). **salleha, selleha** = splinter (Ka.lex.)

- சால்² cāl
- [K. *sāl*, M. *cāl*.] Furrow in ploughing; உழவுசால். உழுத செஞ்சால் (சீவக. 817)

K. phal f. 'strip of wood' (or < phala—3?); S. phāra f. 'slice'; P. phāl f. 'wedge'; Ku. phālo 'piece of wood or metal, iron bar'; N. phāli 'thin strip of metal' (CDIAL 9073)

Rebus: ***Ta.*** **pāḷam** metal cast in moulds. ***Ma.*** **pāḷam** ingot; **vāḷam** id., bar of gold or iron; a hammer for the chisel. ***Ka.*** **pāḷa** ingot of gold or silver (DEDR 4114).

badhi 'to ligature, to bandage, to splice, to join by successive rolls of a ligature' (Santali) **batā** bamboo slips (Kur.); **bate** = thin slips of bamboo (Malt.)(DEDR 3917).

baddī = ox (Nahali) **barad(h)** (Bi.)(CDIAL 9176)

badhia = castrated boar (Santali)

baḍhi = worker in wood and metal (Santali) **baṛae** = blacksmith (Ash.)

ḳa̐ĕr 'strips' (Gypsy)(CDIAL 3873)
Pk. *khāṇī*— f. 'mine' (CDIAL 3873)

Frequencies of pairing and examples

h423, 4056

4404

1345

m0873, 1170

Frequencies of pairing with Sign 123:

44, 54, 24, 23 occurrence respectively:

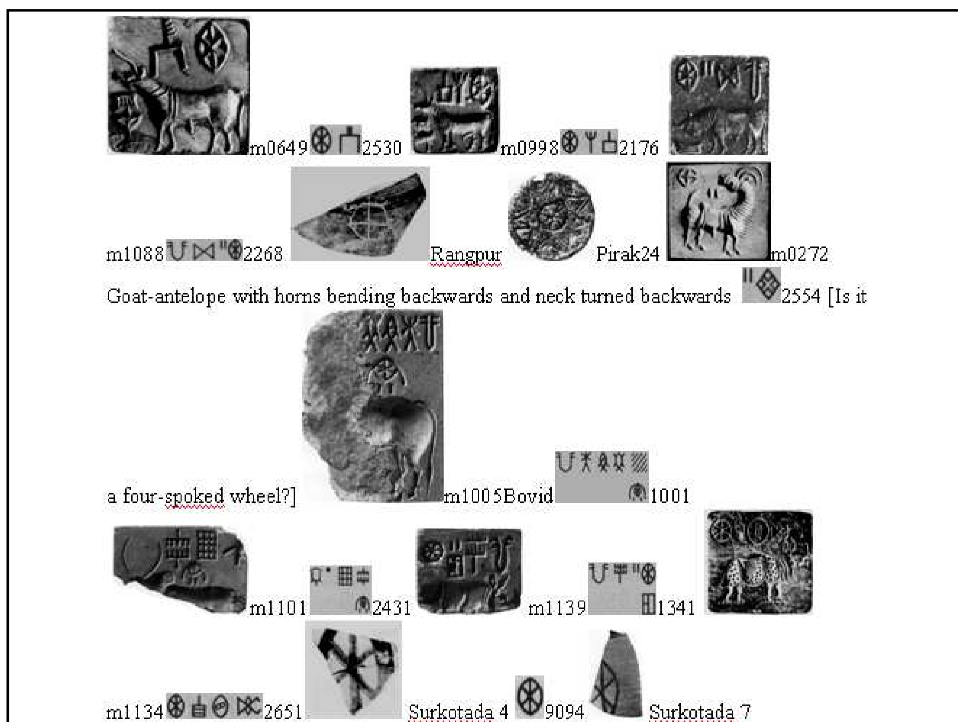
Association semantics: *phāli* 'thin strip of metal' (CDIAL 9073) Rebus: ***Ta.*** **pāḷam** metal cast in moulds (DEDR 4114). **baḍhi** = worker in wood and metal (Santali)

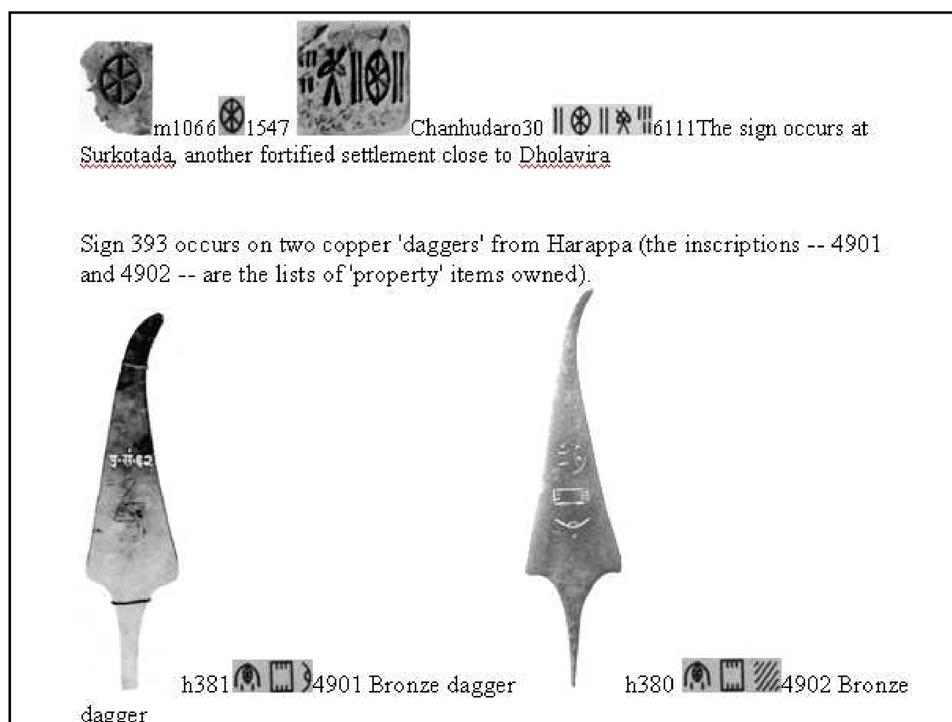
dā~ṭu = cross over; daṭ- (da.ṭ-t-) to cross (Kol.)(DEDR 3158) Rebus: dhātu 'mineral'; dhatu = a mineral, metal (Santali)

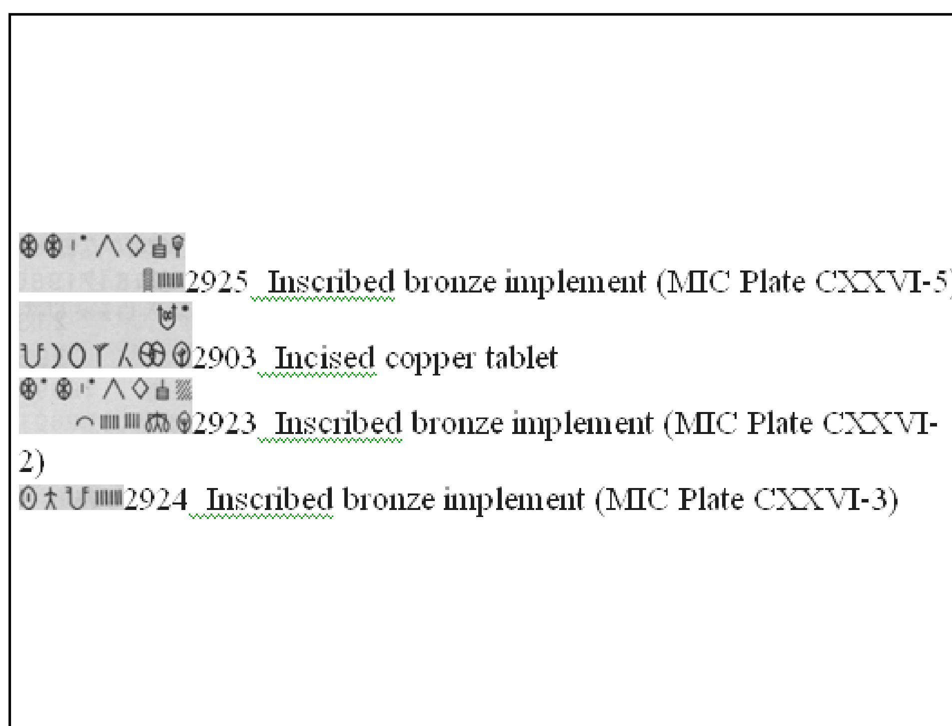
koṇḍa-miṇḍi eyelid (Go.)(DEDR 4864). Rebus: meḍ 'iron' (Santali. Mundari)

eraka 'nave of wheel' (Ka.); Rebus: eraka, er-aka = any metal infusion (Ka.Tu.) ***Tu.*** **eraka** molten, cast (as metal); **eraguni** to melt (DEDR 866)

ḍato 'claws or pincers (chelae) of crabs' (Santali); Rebus: dhātu 'mineral'; dhatu = a mineral, metal (Santali)

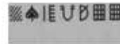



m1066 1547 Chanhudaro30 6111The sign occurs at Surkotada, another fortified settlement close to Dholavira
Sign 393 occurs on two copper 'daggers' from Harappa (the inscriptions -- 4901 and 4902 -- are the lists of 'property' items owned).
h381 4901 Bronze dagger
h380 4902 Bronze dagger


2925_Inscribed bronze implement (MIC Plate CXXVI-5)
2903_Incised copper tablet
2923_Inscribed bronze implement (MIC Plate CXXVI-2)
2924_Inscribed bronze implement (MIC Plate CXXVI-3)

pasaramu, pasalamu = an animal, a beast, a brute, quadruped (Te.lex.) Rebus: pasra 'smithy' (Santali)

m1405Bt Pict-48 A tiger and a rhinoceros in file 2841

1626 Pict-47 Row of uncertain animals in file.

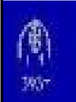
Lothal217A Lothal217B

m0294 One-horned bull?; elephant 1376



m0439t m440AC A person (monkey?) shown together with five animals (two bulls, boar, elephant, antelope) surrounding a lizard

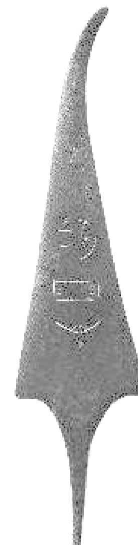
m1393t m1394t



Sign 393 homonymous with 

- M 1101, h380A (bronze dagger): nave of wheel, 'eraka'
- Rebus: eraka, 'metal infusion'
- Pair (synonym: two strokes): dul (cast) eraka (copper)
- aduru ḍangra 'zebu bull'
- Rebus: aduru 'native metal'; ḍangra 'smith'
- **gummaṭa** cupola, dome (Ka.)
- **kumpaṭi** = chafing dish (Te.)

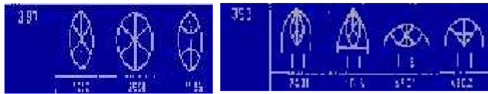




Why svastika appears with elephant (ib, iron) and tiger (looking back, kol –pancaloha – krammara; heraka 'spy' (Skt.); eraka (G.); erga = act of clearing jungle (Kui) eru_, aru = eagle (Akkadian/Assyrian) eruva = eagle, kite (Ma.)(DEDR 819) eraka 'nave of wheel' (Ka.) rebus: eraka 'copper') glyphs: sattva, jasta is zinc; rebus: svastika



M0309 Person seated on tree branch. Tiger turns back, look up.
Baluchistan potsherd: tiger ligatured eagle.





2802 Prism: Tablet in bas-relief. Side b: Text +One-horned bull + standard. Side a: From R.: a composite animal; a person seated on a tree with a tiger below looking up at the person; a svastika within a square border; an elephant (Composite animal has the body of a ram, horns of a zebu, trunk of an elephant, hindlegs of a tiger and an upraised serpent-like tail). Side c: From R.: a horned person standing between two branches of a pipal tree; a ram; a horned person kneeling in adoration; a low pedestal with some offerings.



mon.d. the tail of a serpent (Santali); man.d.a_ = warehouse, workshop (Kon.lex.)

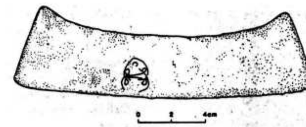
M0482, Text 1620
Svastika appears with tree (kuṭi rebus: kuṭhi 'smelter');
svastika is metal zinc, jasta, sattva
crocodile with fish: kaulo mengro 'blacksmith' (Gypsy)



Why svastika appears with endlessknot glyph [meṛhao ‘twisted’ (Mu.); meḍ ‘iron’ (Mu.)]: ‘sattva, jasta’ = zinc





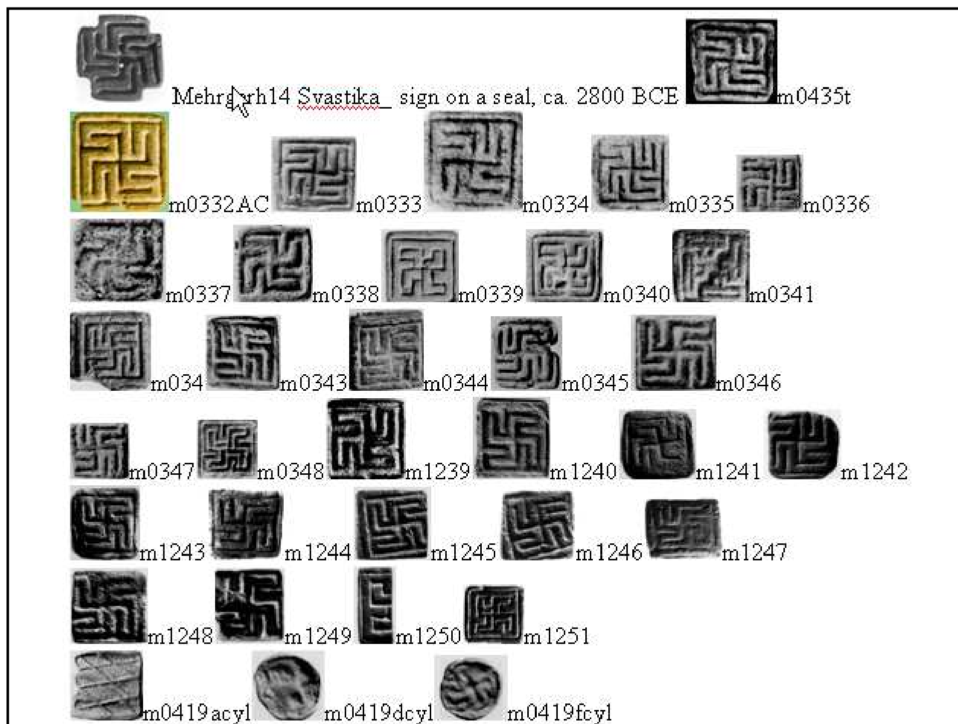


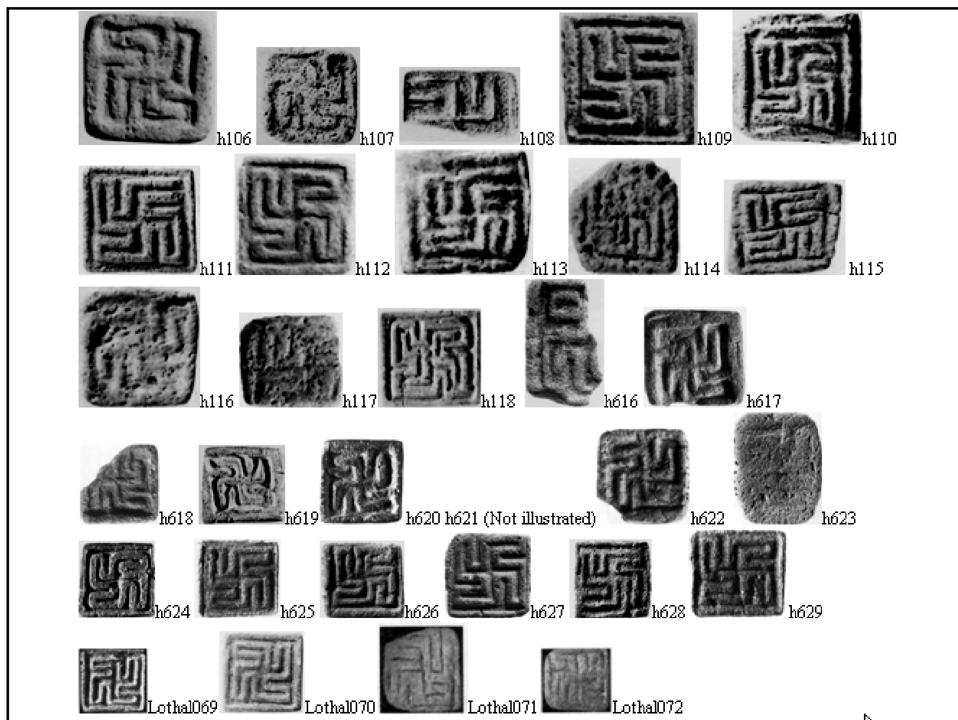
- Cylinder seal impression. Sumer (ca. 2500 BCE). After Amiet 1980a: pl. 108, no. 1435
- Early Dynastic seal. Lagash. After Amiet 1980a: pl. 83, no. 1099
- Rojdi axe
- **meṛhao** = v.a.m. entwine itself; wind round, wrap round roll up; mar.hna_ cover, encase (H) (Santali.lex.Bodding) [Note: the endless-knot motif may be a rebus representation of this semant. ‘entwine itself’]. **meḍhā** = curl, snarl, twist or tangle in cord or thread (M.); **meli, melika** = a turn, a twist, a loop, entanglement; **meliyu**, melivad.u, meligonu = to get twisted or entwined (Te.lex.) **merhao** = twist (Mun.d.ari)
- **me~ṛe.he~t** = iron (Santali)

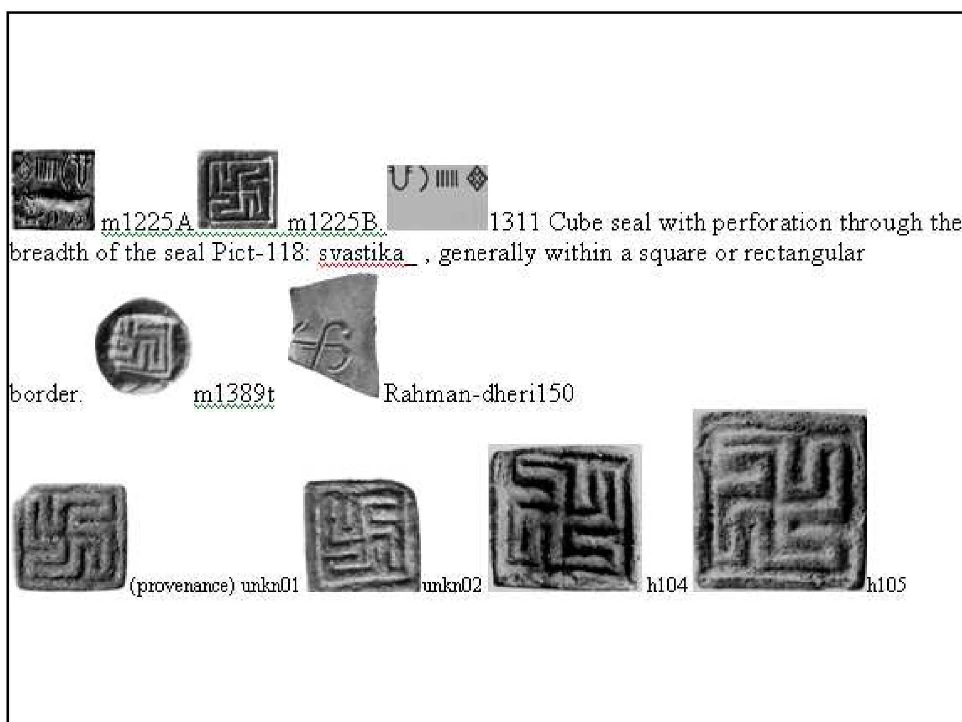
Svastika, endless-knot



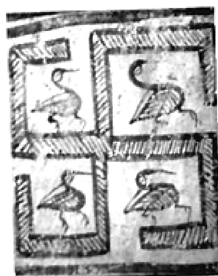
- m1356
- m443Atm443Bt
- Chanhudaro49A Chanhudaro49B
- Chanhudaro50A Chanhudaro50B
- m1457Actm1457Bct 2904 Copper tablet
- m0507Atm0507Bt 3350 m0508Atm0508Bt 3352 Copper tablets


Mehrgarh14 Svastika_ sign on a seal, ca. 2800 BCE
m0435t
m0332AC
m0333
m0334
m0335
m0336
m0337
m0338
m0339
m0340
m0341
m034
m0343
m0344
m0345
m0346
m0347
m0348
m1239
m1240
m1241
m1242
m1243
m1244
m1245
m1246
m1247
m1248
m1249
m1250
m1251
m0419acyl
m0419dcyl
m0419fcyl


h106
h107
h108
h109
h110
h111
h112
h113
h114
h115
h116
h117
h118
h616
h617
h618
h619
h620 h621 (Not illustrated)
h622
h623
h624
h625
h626
h627
h628
h629
Lothal069
Lothal070
Lothal071
Lothal072



Thomas Wilson, [curator, Department of Prehistoric Anthropology], notes: "(svastika_) is characterized by straight bars of equal thickness throughout, and cross each other at right angles, making four arms of equal size, length and style." While not finding definitive clues as to its time or place of origin, Wilson concludes that the svastika_ was perhaps the first symbol to be made with 'a definite intention' and a continuous or consecutive meaning, the knowledge of which passed from person to person. The view that the symbol may perhaps have represented a known object, is echoed by Ashley and Butts. H.J.D Ashley wrote: "In the first instance probably the svastika_ may have represented the course of the sun in the heavens revolving normally from left to right." (1925, The Swastika: A study, *The Quest*, January 1925). Edward Butts noted: "…It is evident that the svastika_ figure is only emblematic of what it originally was, from the fact that it must have been a more useful device and of very necessary application to have forced itself into the needs of so many widely distributed localities." [1901, *Statement No.1: The Swastika*, Kansas City, Franklin Hudson Publishing Co.]



Friedrich Max Mueller characterized the symbol with its hooks facing left-ward as suavastika, but there is no corroboration for such a lexeme. Wilson analyzed the occurrence of the symbol on artifacts – from funeral urns to spears – and attempted a classification by physical and symbolic properties to fathom some logic as to why the symbol has been prevalent in so many cultures for so long. It is difficult to surmise that the sign was just ornamental; it had some specific symbolic importance.

Troy. Svastika_ with four birds. [Compare the two ducks shown with the symbol in Cyprus. Source: Dr. Henry Schliemann, 1885, *Tiryns: the prehistorical palace of the kings of Tiryns*, New York, Charles Scribner's Sons].

BHIMBETKA	[illegible]								
”	”								
HARAPPA [illegible]	SEAL & SEALING								
MOHENJODARO [illegible]	”								
[illegible]	POTTERY								
[illegible]	”								
[illegible]	SEAL & SEALING								
TAXILA	[illegible]								
[illegible]	[illegible]								

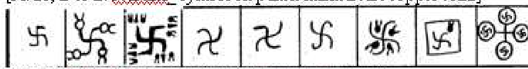
[Pl. 27, Svastika_ symbol: distribution in cultural periods]



[Pl. 28, A, Ramnagar, Lotapur, Mamdar, Singavaran: Punch-marked coins]

B	NAGARI FINDS	”			
C	KAUŚĀMBĪ	UNINSCRIBED & INSCRIBED CAST COPPER [illegible]			
D	KADA	COPPER coins			
E	ERAN	COPPER PUNCH-MARKED COINS			

[Pl. 28, B to E: svastika_ symbol on punch-marked/cast copper coins]



[Pl.28, F: Ujjayini, copper coins with svastika_ symbol]

TAXILA	”			
AYODHYA	”			
ARJUNAYANA SIBIS KUNINDA KULUTA YAUDHEYA	”			
SĀTAVĀHANA	COINS			

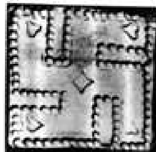
[Pl. 28, G to J, Taxila, Ayodhya, Arjunayana, Sibis, Kun.inda, Kuluta, yaudheya, S'a_tava_hana coins: Svastika_ symbol]

Svastika_ symbol used in historical periods



Stone toilet tray, Sirkap, Taxila, Stratum II (pl. g = No. 246, Marshall);

Gold amulet, Svastika_, 1st cent. CE, Sirkap, Taxila (Pl. 191, No. 85, Marshall).



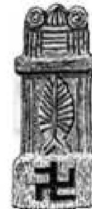
Copper seal, svastika_, Sirkap, Taxila, stratum II, legend indistinct, pl. 55 no. 27, Marshall).



Cypriot artifact with svastika_ flanked by two ducks.

Altar from south of France.



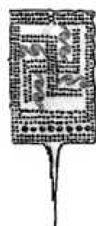


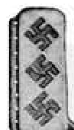
Cypriot artifact with svastika_ on the shoulder of the warrior holding a bull model in his left hand; his hind-part is the hind-part of a bull? Ancient coins of Bharat with svastikas, normal and ogee (After Figs. 231 to 234 in Thomas Wilson, opcit). The coins were found by Cunningham at Behat near Shaharanpur. E. Thomas assigns them to about 330 BCE. (Edward Thomas, *Jour. Royal Asiatic Soc. (new series)*, I, p. 175). The svastika sign does not appear in Indo-Bactrian (ca. 300 to 126 BCE), Indo-Sassanian (from 200 to 636 CE) or later Hindu or Mohammedan coins. The sign of svastika becomes an integral part of the temple architectural tradition and becomes a sacred symbol of the Hindu, Buddha and Jaina traditions.



Many bronze articles with svastika_ sign; Dates: Unknown [Source: Thomas Wilson, *Report of National Museum*, 1894]. Celts who were proficient bronze- and gold-workers also used the svastika_ motif.

Bronze pin-head from the Caucasus





Marks of three svastika_ on black pottery from Caucasus

Fragment of bronze ceinture from Necropolis of Koban, Caucasus









Bronze pin from Bavaria

Spearhead with svastika, from Germany

Footprints of the Feet of the Buddha; note the svastika just below the fingers. [Source: Alexander Cunningham, 1962, *The Stupa of Bharhut: a Buddhist monument*, Varanasi, Indological Book House].

Cypriot artifact with svastika_. Note the symbol on the stylized, flower-like wheel of the chariot



kaṇḍa ‘arrow’

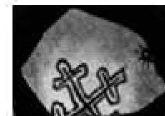
kaṇḍ = a furnace, altar (Santali.lex.)

The arrow sign terminates 184 inscriptions (out of a total of 227 inscriptions in which the sign occurs)



[See also identical tablets: m0457 to 0462]

Four-crosses motif on a Mohenjo-daro tablet M-463 is comparable to the same motif which appears painted on a potsherd of Malwa ware from Navdatoli, Maharashtra, c. 1700-1400 BCE. [After H.D.Sankalia, SB Deo and ZD Ansari, 1971, *Chalcolithic Navdatoli: the excavations at Navdatoli, 1957-59*. Poona: 216f., fig. 87: D 585 (sherd 8355 I A 13/5; After Paropla, 1994, p.55, fig. 4.4).



h613A h613C 4259 Endless-knot motif?



Cylinder-seal impression from Ur showing a squatting female. L. Legrain, 1936, *Ur excavations, Vol. 3, Archaic Seal Impressions*.
kuṭhi 'smelting furnace' (Santali) **kūti** = pudendum muliebre (Ta.)(DEDR 188) **kuṭhi** = the pubes (lower down than pan.d.e) (Santali.lex.) IS is it kola 'foetus' or kuṭi 'tree' (phonetic determinant of **kūti** = pudendum muliebre shown on Harappa tablet h180?)



Rahman-dheri01, urseal11Seal; UPenn; a scorpion and an elipse [an eye (?)]; U. 16397; Gadd, PBA 18 (1932), pp. 10-11, pl. II, no. 11, urseal15 Ur Seal impression; UPenn; steatite; bull below a scorpion; dia. 2.4cm.; Gadd, PBA 18 (1932), p. 13, Pl. III, no. 15; Legrain, MJ (1929), p. 306, pl. XLI, no. 119; found at Ur in the cemetery area, in a ruined grave .9 metres from the surface, together with a pair of gold ear-rings of the double-crescent type and long beads of steatite and carnelian, two of gilt copper, and others of lapis-lazuli, carnelian, and banded sard.

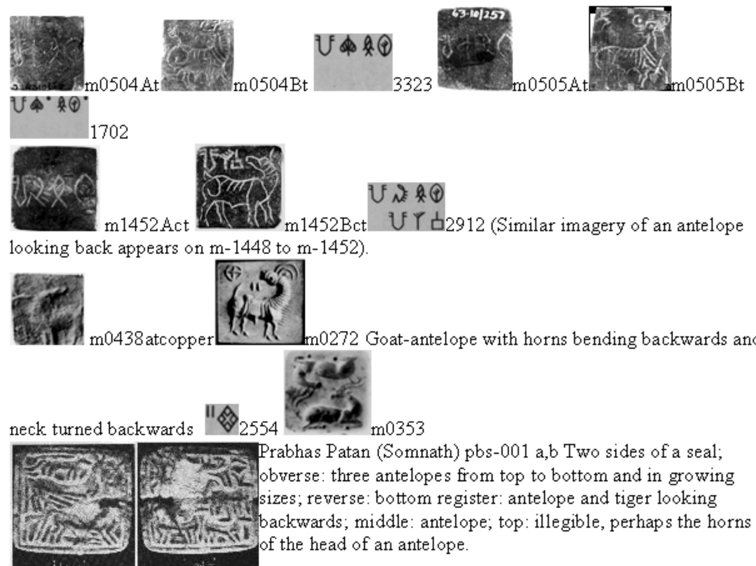
bica, bica-diri (Sad. bicā; Or. bicī) stone ore; meṛeḍ bica, stones containing iron; tambabica, copper-ore stones; samṛobica, stones containing gold (Mundari.lex.)

mu~h metal ingot (Santali) **mu~ha~** = the quantity of iron produced at one time in a native smelting furnace of the Kolhes; iron produced by the Kolhes and formed like a four-cornered piece a little pointed at each end; **mūhā me~ṛhe~t** = iron smelted by the Kolhes and formed into an equilateral lump a little pointed at each end; **kolhe tehen me~ṛhe~t mūhā akata** = the Kolhes have to-day produced pig iron (Santali.lex.)

The Sanskritization of Assamese bicā , deśī vachi is: vṛścika scorpion (RV); vicchika (Pali); vicchia, vim.chia (Pkt.); bich (Sh.); bichī (Ku.); bicā (A.); bichā (B.Or.); būch (Mth.); bīchī (Bhoj.Aw.H.); vīchī, vi~chī (G.); ucum (Pas'.); vichu~ (S.); vicchua, vim.chua (Pkt.); vichu~ (L.); bicchu~ (P.); bichu (Or.); bīchu (Mth.); bicchu~, bīchū (H.); vīchu (G.); viccu, viccua, vim.cua (Pkt.); byucu (K.); biccū (P.); biccū (WPah.); vīcū (M.); viccu, vim.cu (Kon.); bacchius large hornet (n.)(CDIAL 12081).
salae sapae = untangled, combed out, hair hanging loose (Santali.lex.) *sal* workshop (Santali)

Antelope looking back

meD 'iron'; me~d.ha 'antelope'
krammara 'look back'; kamar 'smith'

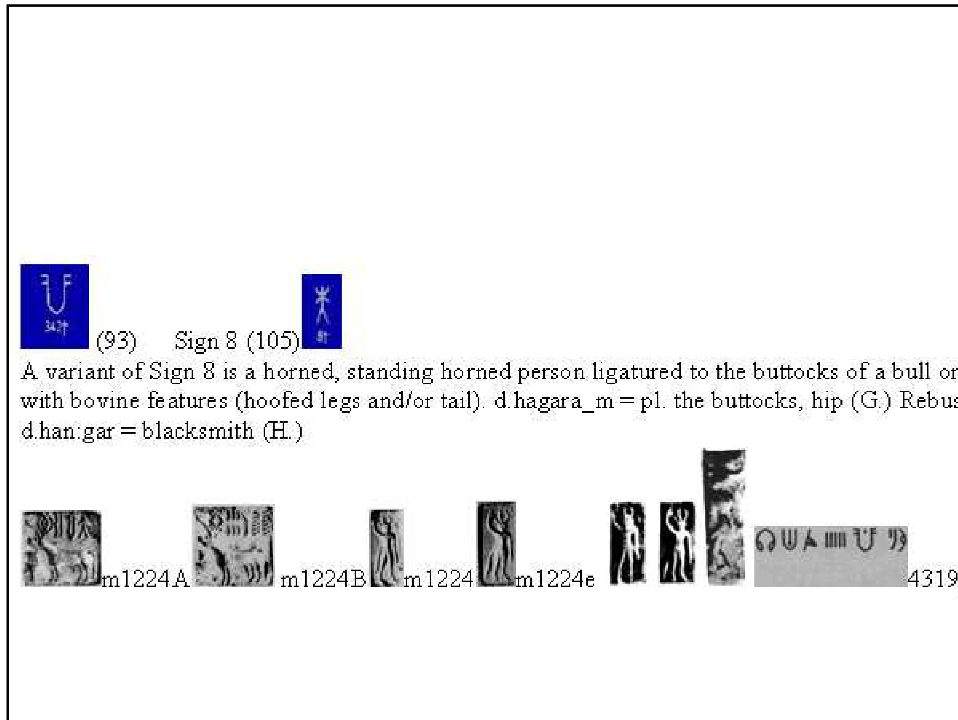


m0504At m0504Bt 3323 m0505At m0505Bt 1702

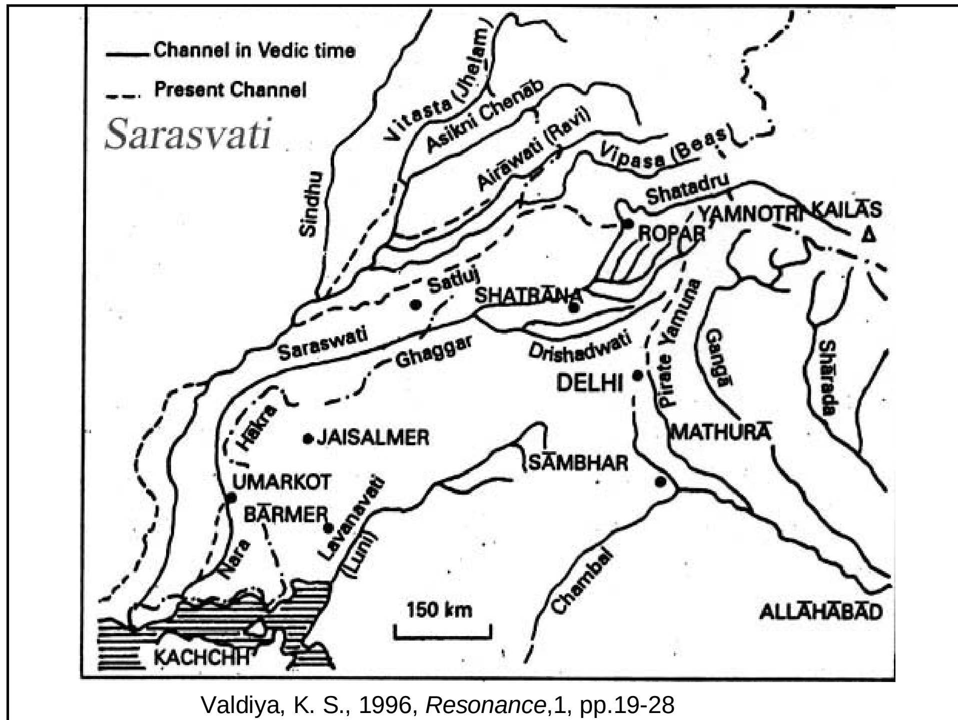
m1452Act m1452Bct 2912 (Similar imagery of an antelope looking back appears on m-1448 to m-1452).

m0438atcopper m0272 Goat-antelope with horns bending backwards and neck turned backwards 2554 m0353

Prabhas Patan (Somnath) pbs-001 a,b Two sides of a seal; obverse: three antelopes from top to bottom and in growing sizes; reverse: bottom register: antelope and tiger looking backwards; middle: antelope; top: illegible, perhaps the horns of the head of an antelope.

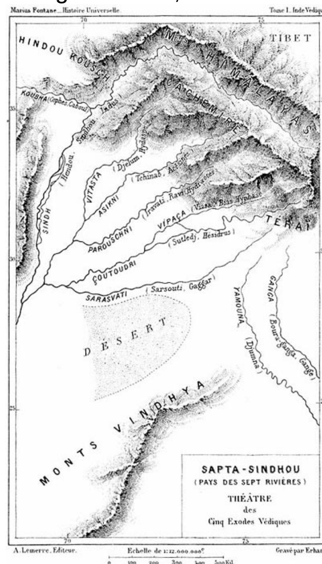


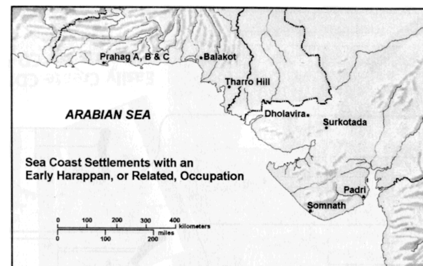
Civilization continuum from the Vedic Sarasvati River basin



Valdiya, K. S., 1996, *Resonance*,1, pp.19-28

Map of Sapta Sindhu (Nation of Seven Rivers): Theatre of Pan~cajana_h,Five Peoples
Marius Fontane, 1881, *Histoire Universelle, Inde Vedique* (de 1800 a 800 av. J.C.), Alphonse Lemerre, Editeur, Paris. Amri-Nal maritime roots. He'lavo, elelo 'seamens' song': Mleccha 'lingua franca'; Sanskrit 'literary language', grammatically correct.





The Sohgaura copper plate (4th cent. BCE) refers to a pair of kos.t.ha_ga_ra (dva_ra kot.t.haka); the two storehouses described as tri-garbha (i.e. having three rooms) are illustrated on line 1. (Fleet, *JRAS*, 1907). The illustrations indicate that the three rooms are in three storeys, with supporting pillars clearly seen. The inscription refers to the junction of three highways named Manavati, in two villages called Dasilimita and Usagama. The storehouses were made at this junction for the goods of people using the highways, which are indicated in line 3 by mentioning the three places to and from which they led. One of the names give is recognized by Fleet as Chanchu. (Fleet, *JRAS*, 63, 1894 proceedings, 86, plate, IA 25. 262; cf. Sohgaura copper plate/B.M. Barua. *The Indian Historical Quarterly,* ed. Narendra Nath Law. Reprint. 41)



Punchmarked coin. Fifth sign from left is a rimmed, short-necked jar (Sign 342, Daimabad seal, which has the most-frequent, 1,395 occurrences on epigraphs). Sign 342, 417 and punch-mark symbols, pre-mauryan

kaṇḍ kanka = rim of jar; rebus: **kan-** 'copper', **kaṇḍ** 'furnace' (Santali)

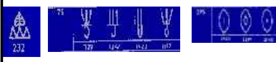
kuṭi = tree; rebus: **kuṭhi** = smelting furnace; **koṣṭhāgāra** = storehouse; *s'u_la* = spear; **cūḷa** = kiln; *bat.a* = quail; rebus: **baṭa** 'kiln'.

kallan mason (Ma.); *kalla* glass beads (Ma.); *kalu* stone (Kond.a); *xal* id., boulder (Br.)(DEDR 1298). *kala* stag, buck (Ma.); *kal a.r.* Nilgiri ibex (Ko.); *kalai* stag, buck, male black monkey (Ta.); *kalan:kompu* stag's horn (Ta.)(DEDR 1312)

Stmp seal, large ibex walking left. Black steatite or chlorite, North Syria or Anatolia, 4th millennium BC, 1 rectangular gabled stamp seal, 4,7x5,1x1,3 cm, pierced through. *Provenance:* 1. Erlenmeyer Collection, Basel (before 1958-1981); 2. The Erlenmeyer Foundation, Basel (1981-1997); 3. Sotheby's 12.6.1997:8.



A solid copper bolt (24 1/2" in length and a circumference of 14" at the centre and 12" at the ends), was found in the Rampurva Asoka Pillar near Nepal border.



h188, h196, h291, h630, h631

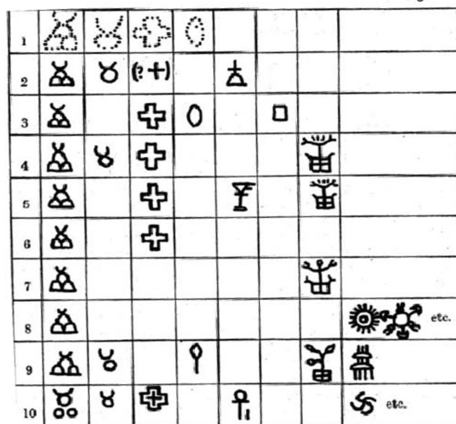
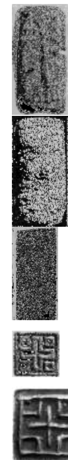
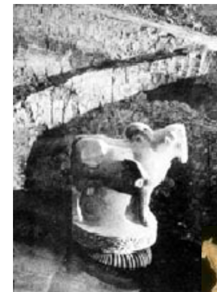


Fig. 2.—1, Rāmpurvā bolt; 2, Kumrāhār base; 3, Patna bowls; 4, cast copper coins, types G, H, J, K; 5, ditto, type F; 6, ditto, type M; 7, ditto, type O; 8, debased silver punch marked coins; 9, Sohgaura plate; 10, Patna copper band.



The copperbolt with epigraph (line 1) was used to bolt in the bull capital on the pillar.



M. अग्निकुंड (p. 009) [agnikuṇḍa] *n* (S) A hole in the ground, or an enclosed space on the surface, or a metal square-mouthed vessel, for receiving and preserving consecrated fire.

Rampurva bull capital, 3rd cent. BCE; m1103

Rampurva pillar edict text:

- Thus saith king Priyadarsi, Beloved of the Gods.
- Twelve years after my coronation, records relating to Dharma were caused to be written by me for the first time for the welfare and happiness of the people, so that, without violation thereof, they might attain the growth of Dharma in various respects.
- Thinking: "Only in this way the welfare and happiness of the people may be secured." I scrutinize as to how I may bring happiness to the people, no matter whether they are my relatives or residents of the neighborhood of my capital or of distant localities. And I act accordingly. In the same manner, I scrutinize in respect of all classes of people. Moreover, all the religious sects have been honored by me with various kinds of honors. But what I consider my principal duty is meeting the people of different sects personally.
- This record relating to Dharma has been caused to be written by me twenty-six years after my coronation.







•Sohgaura copper plate (Pre-Mauryan)

- Hieroglyph 1 (from left): glyph: tree, rebus: smelting furnace
- kuṭhi kuṭa, kuṭi, kuṭha a tree (Kaus'.); kud.a tree (Pkt.); kuṛā tree; kaṛek tree, oak (Pas;.)(CDIAL 3228). kuṭha, kuṭa (Ka.), kudal (Go.) kudar. (Go.) kuṭhāra, kuṭha, kuṭaka = a tree (Skt.lex.) kut., kurun: = stump of a tree (Bond.a); khut. = id. (Or.) kut.a, kut.ha = a tree (Ka.lex.) gun.d.ra = a stump; khuṇṭut = a stump of a tree left in the ground (Santali.lex.) kuṭamu = a tree (Te.lex.)
- kuṭi, 'smelting furnace' (Mundari.lex.).kuṭhi, kuṭi (Or.; Sad. koṭhi) (1) the smelting furnace of the blacksmith; kut.ire bica duljad.ko talkena, they were feeding the furnace with ore; (2) the name of e_kut.i has been given to the fire which, in lac factories, warms the water bath for softening the lac so that it can be spread into sheets; to make a smelting furnace; kut.hi-o of a smelting furnace, to be made; the smelting furnace of the blacksmith is made of mud, cone-shaped, 2' 6" dia. At the base and 1' 6" at the top. The hole in the centre, into which the mixture of charcoal and iron ore is poured, is about 6" to 7" in dia. At the base it has two holes, a smaller one into which the nozzle of the bellow is inserted, as seen in fig. 1, and a larger one on the opposite side through which the molten iron flows out into a cavity (Mundari.lex.)
- Hieroglyph 3 glyph: spear rebus: furnace
- śūla = spear (Skt.)
- cuḷḷai = potter's kiln, furnace (Ta.); cu_l.ai furnace, kiln, funeral pile (Ta.); cul.l.a potter's furnace; cu_l.a brick kiln (Ma.); culli_ fireplace (Skt.); culli_, ulli_ id. (Pkt.)(CDIAL 4879; DEDR 2709). sulgao, salgao to light a fire; sen:gel, sokol fire (Santali.lex.) hollu, holu = fireplace (Kuwi); sod.u fireplace, stones set up as a fireplace (Mand.); ule furnace (Tu.)(DEDR 2857).
- Hieroglyph 4 glyph: peak mounted by a rimless pot rebus: furnace
- kūṭa = peak (Telugu)
- baṭa = rimless pot (Kannada)
- kūṭam = workshop (Tamil); baṭa = furnace (Santali) bhrāṣṭra = furnace (Skt.)
- Hieroglyph 5 glyph: tree (as shown on hieroglyph 1) with a rim of a jar and a quail ligatured on the branches of tree
- kuṭi = tree; rebus: kuṭi = smelting furnace.
- kaṇḍ kanka = rim of jar (Santali); kaṇḍ = fire-altar (Santali); kan = copper (Tamil)
- baṭa = quail (Santali)
- baṭa = furnace (Santali) bhrāṣṭra = furnace (Skt.)
- Hieroglyph 2 and hieroglph 6: koṣṭha_ga_ra, a pair of storehouses
- Thus the line 1 is a hieroglyphic representation of facilities provided to artisan guilds,
- itinerant metalsmiths at the tri-junction of three highways.
- Date? Pre-Mauryan, that is first millennium BCE



Ligatures in Sarasvati Hieroglyphs: both pictorial motifs and signs are hieroglyphs

- Smith's/Artisan's repertoire
- Huntington notes: "There is a continuity of composite creatures demonstrable in Indic culture since Kot Diji ca. 4000 BCE" http://huntingtonarchive.osu.edu/Makara%20Site/makara/index.html
- Mriga (pair of deer or antelope) in Buddha sculptures compare with Harappan period prototype of a pair of ibexes on the platform below a seated yogin http://tinyurl.com/gonsh
- Examples of Sarasvati hieroglyphs and continuity of the writing system

Mahajanapada, Darada, Trigarta, Kirata, Yaudheya, Dravida: mleccha

India, 600 B.C.
The 16 Mahajanapadas

Figure 1. Possible locations of the seismic regions.

Riverine, maritime civilization











Steatite seal showing boat, Mohenjodaro.Sindhu River near Mohenjodaro. Boat and cart still plying here.

24. Moulded tablet, Mohenjo-daro.

Three sided molded tablet. One side shows a flat bottomed boat with a central hut that has leafy fronds at the top of two poles. Two birds sit on the deck and a large double rudder extends from the rear of the boat. On the second side is a snout nosed gharial with a fish in its mouth. The third side has eight symbols of the Indus script.

Material: terra cotta **Dimensions:** 4.6 cm length, 1.2 x 1.5 cm width Mohenjo-daro, MD 602 **Islamabad Museum,** NMP 1384
Dales 1965a: 147, 1968: 39

22. Toy carts, Nausharo.

Terra cotta toy carts from the Harappan period site of Nausharo in Baluchistan. Holes along the length of the cart serve to hold wooden side bars and at the center of the cart two of the wooden side bars can be extended below the frame to hold the axle. A long stick inserted into the holes at the end of the cart would have been used to support a yoke. The two wheels were found lying next to the cart frame. Period III, Harappan, 2300-2200 B. C. Similar carts are still used in rural areas of Pakistan and India (#2).

Material: terra cotta **Dimensions:** Larger cart - 17 cm length, 8 cm width, 1.2 cm thickness; Wheel - 7 cm dia., 1.2 cm thickness Nausharo, NS/88/IV [Accession Number with year] **Department of Archaeology, Karachi,** EBK 6916 Jarrige 1990: XVa

Early script from Harappa, ca. 3300-2600 BCE. [After Fig. 4.3 in JM Kenoyer, 1998].



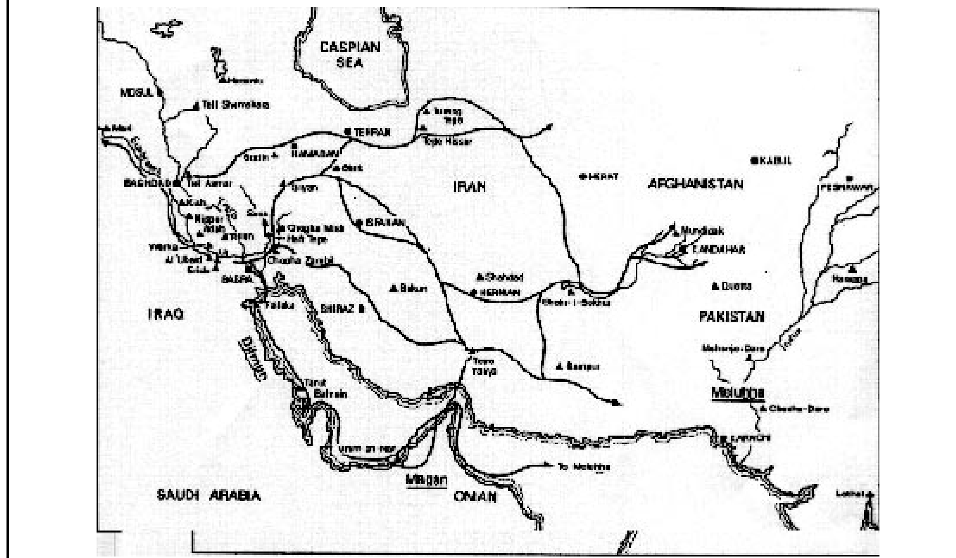
• ca. 6500–2600 BCE Early Neolithic communities are gradually linked in extensive trading networks across the Sarasvati Sindhu Valley region. The period is characterized by the elaboration of ceramics, the beginning of s'ankha (turbinella pyrum) industry (Nausharo, 6500 BCE), copper metallurgy, stone bead making, and seal carving. The beginning of writing is seen in the form of graffiti on pottery from circa 3500 BCE. A more complicated writing system seems to have developed out of or in conjunction with this pottery-marking system; examples exist from around 2800 BCE.

• ca. 2600–1400 BCE An integrated urban culture flourishes in the northwest, producing large-scale settlements with advanced grid-pattern urban planning and an abundance of material remains, including terracotta, metal, stone sculpture, seals, and coins. Large cities such as Mohenjo Daro and Harappa in present-day Pakistan prosper through trade with cultures to the west, and smaller settlements expand through the plains of present-day Pakistan and Northern Bharat. Numerous seals, some copper plates and a few weapons have been found featuring a complex writing system. A seal was found in Daimabad (1400 BCE) with the unique glyph of a rimmed, short-necked jar. Some images on these seals—of bulls, horned headdresses, and figures seated in yoga-like postures—possibly relate to later cultural and spiritual developments in Bharat and use of copper plate inscriptions for recording property/economic transactions.

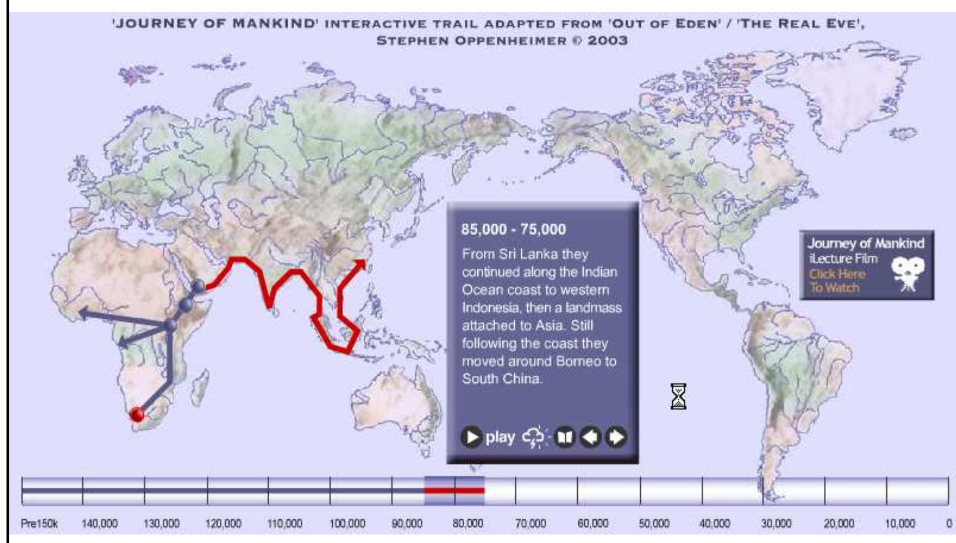


Early potters' marks from Rehman Dheri ca. 3500-2600 BCE [After Durrani et al. 1995].

Interaction areas. After Fig. 2 in P.R.S. Moorey, 1994, *Ancient Mesopotamian Materials and Industries,* Oxford, Clarendon Press.



http://www.bradshawfoundation.com/stephenoppenheimer/
Early maritime journey of mankind along IOC rim
First exit out of Africa 150k-80k years ago, then Mt. Toba erupts



Epic India with many mleccha regions



Cultural continuity of Sarasvati Civilization in India

- Continued use of shankha (turbinella pyrum) bangles which tradition began 6500 BCE at Nausharo;
- Continued wearing of sindhur at the parting of the hair by married ladies as evidenced by two terracotta toys painted black on the hair, painted golden on the jewelry and painted red to show sindhur at the parting of the hair;
- Finds of shivalinga in situ in a worshipful state in Harappa (a metaphor of Mt. Kailas summit where Maheśvara is in tapas, according to Hindu tradition);
- Terracotta toys of Harappa and Mohenjodaro showing Namaste postures and yogasana postures;
- Three-ring ear-cleaning device
- …more

Cultural continuum justifies search for mleccha glosses from ancient forms of words of the linguistic area

- **Language and culture as intertwined, continuing legacies**
  - Legacy of architectural forms
  - Legacy of puṣkariṇi in front of mandirams; as in front of Mohenjodaro stupa
  - Legacy of metallurgy and the writing system on punch-marked coins
  - Legacy of continued use of *cire perdue* technique for making utsava bera (bronze murti)
  - Legacy of the writing system on Sohgaura copper plate
  - Legacy of glyphs continuing on aṣṭamangalahāra
  - Legacy of the writing system on Bharhut ligatures
  - Legacy: śrivatsa glyph metaphor; śrivatsa and śrisuktam
  - Legacy: Engraved celt tool of Sembiyan-kandiyur with Sarasvati hieroglyphs: calling-card of an artisan
  - Legacy of acharya wearing uttariyam leaving right-shoulder bare
  - Form of addressing a person respectfully as: arya, ayya (Ravana is also referred to as arya in the Great Epic Ramayana)
  - Gautama the Buddha refers to eṣa dhammo sanantano; Mahavira refers to 'ariya' dhamma (arya meaning 'right conduct, respectful')

Bronze murti: *cire perdue* technique used today in Swamimalai to make bronze utsavabera.

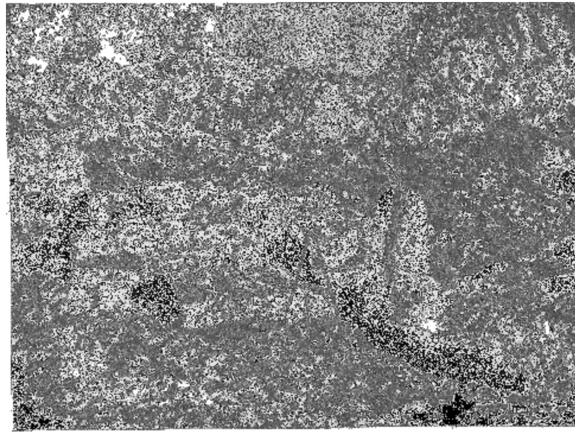
Eraka Subrahmanya is the presiding divinity in Swamimalai. Eraka! Copper.

Devices on punch-marked coins comparable to Sarasvati hieroglyphs






Plate X [c] Lingam in situ in Trench Ai (MS Vats, 1940, *Excavations at Harappa*, Vol. II, Calcutta) Lingam, grey sandstone in situ, Harappa, Trench Ai, Mound F, Pl. X (c) (After Vats). "In an earthenware jar, No. 12414, recovered from Mound F, Trench IV, Square I... in this jar, six lingams were found along with some tiny pieces of shell, a unicorn seal, an oblong grey sandstone block with polished surface, five stone pestles, a stone palette, and a block of chalcedony..." (Vats, EH, p. 370).

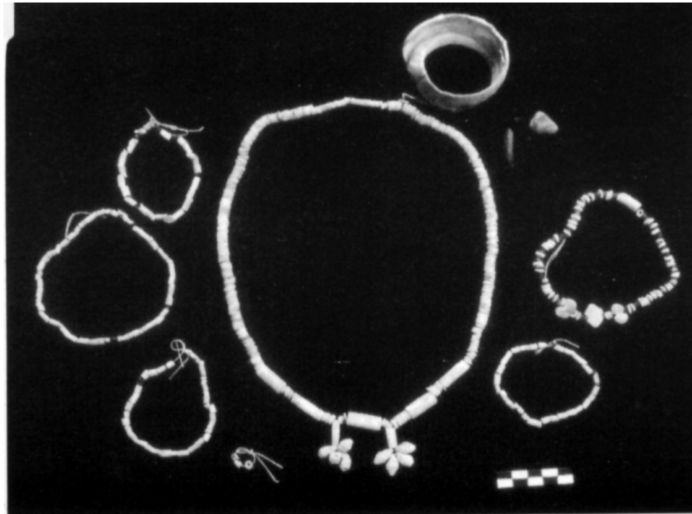


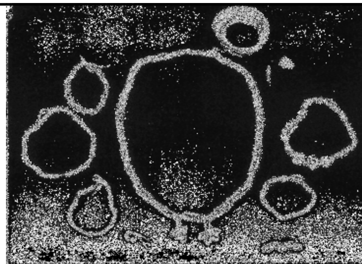


dvAdasha jyotirliNga stotram: *kAverikAnarmadayoH pavitre samAgame sajjanatAraNAya | sadaiva mAndhAtRipure vasantamoNkAramIshaM shivamekamIDe* || *Trans.* I pay my obeisance to the One Who is the savior of the good people and the great One Who always resides at the Holy merging point of Kaveri and Narmada, i.e., Omkar Shiva.

King S'ibi was called Sembiyan. Sembiyan is a popular title assumed by a number of Chola kings. Some claim that Sembiyan denotes a descendant of Shibi. Mutalval.l.alkal. are liberal chiefs offering boundless bounty and are seven: cempiyan, kari- or cakari (according to Aciriya Nikantu), viratan, niruti, tuntumaari, cakaran, nalan.
Sembiyan Mahadevi was the grandmother of Rajaraja Chola I. She was widowed circa 958 CE.

6500 BCE. Date of the woman's burial with ornaments including a wide bangle of shankha. Mehergarh. Burial ornaments made of shell and stone disc beads, and ***turbinella pyrum*** (sacred conch, **s'an:kha**) bangle, Tomb MR3T.21, Mehrgarh, Period 1A, ca. **6500 BCE.** The nearest source for this shell is Makran coast near Karachi, 500 km. South. [After Fig. 2.10 in Kenoyer, 1998].





S'ankha wide bangle and other ornaments, c. 6500 BCE (burial of a woman at Nausharo)

S'ankha, *turbinella pyrum* a signature tune of Hindu civilization; a species which occurs only in Hindumahasagar coastline

S'ankha kr.s'aana (Rigveda, Atharvaveda) – s'ankha bowman, s'ankha cutter
A continuing, 8500 year-old industry

At Tiruchendur (keezhakkarai, Gulf of Mannar), WB Handicrafts Dev. Corpn. has an office; annual turnover of s'ankha obtained: Rs. 50 crores.





Seal, Bet Dwaraka 20 x 18 mm of conch shell

Wide bangle made from a single conch shell and carved with a chevron motif, Harappa; marine shell, *Turbinella pyrum* (After Fig. 7.44, Kenoyer, 1998) National Museum, Karachi. 54.3554. HM 13828.

Seven shell bangles from burial of an elderly woman, Harappa; worn on the left arm; three on the upper arm and four on the forearm; 6.3 X 5.7 cm to 8x9 cm marine shell, *Turbinella pyrum* (After Fig. 7.43, Kenoyer, 1998) Harappa museum. H87-635 to 637; 676 to 679.



Modern lady from Kutch, wearing shell-bangles.



Nausharo: female figurines. Wearing sindhur at the parting of the hair. Hair painted black, ornaments golden and sindhur red. Period 1B, 2800 – 2600 BCE. 11.6 x 30.9 cm.[After Fig. 2.19, Kenoyer, 1998].



Toilet gadgets: Ur and Harappa After Woolley 1934, Vats 1941



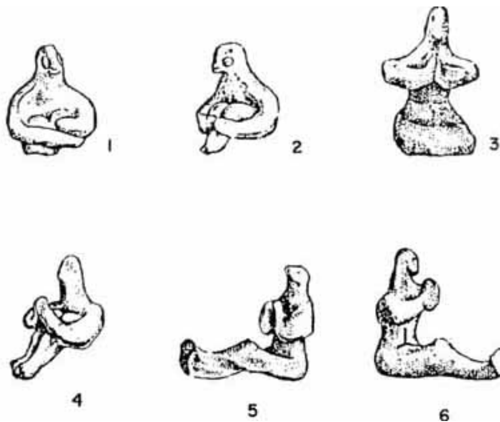


Fig. 4.11 Harappa: A three-in-one toiletry gadget, copper. Mature Harappan



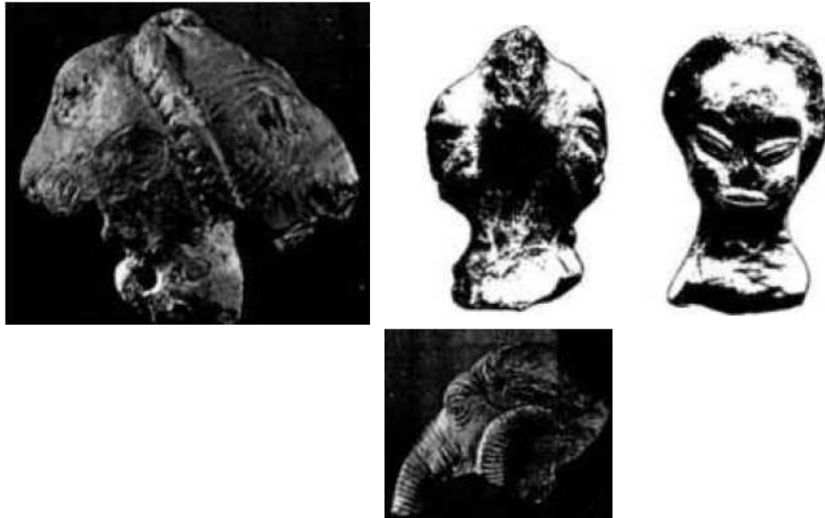
Fig. 4.12 A modern three-in-one toiletry gadget, copper

Terracotta toys show yogic asanas: 1-4, from Harappa; 5-6, from Mohenjo-daro.





Ligatured sculpture: three-faced: tiger, bovine, elephant, Nausharo NS 92.02.70.04 6.76 cm (h); three-headed: elephant, buffalo, bottom jaw of a feline. NS 91.02.32.01.LXXXII. Dept. of Archaeology, Karachi. EBK 7712



Mohenjodaro: mask with horns, humanized bovine
Kalibangan: double-head, one is tiger's head
Kot Diji. Buffalo's long horns ligatured to a human (woman) face



Sculpture as metaphor: anthropomorphh as sculptural metaphor)







- Mahavira anthropomorphic pot. Sonkh. Mauryan period. Museum fur indische kunst, Berlin (Acc. No. So 64(51). Mahavira (pravargya) is a pot used in yajna (RV 10.171.2) Barhut. Double-faced head. Ca. 2nd cent. BCE Museum fur indische kunst, Berlin (acc. No. 1.10.126)
- S'iva. Bhita, UP, Pancamukha linga. 2nd cent. BCE. Lucknow, State Museum (acc. No. H4; after photo by DM Srinivasan Pl. 14.4)
- Harappa. S'ivalinga in situ. Trench Ai, Mound F(Pl. X, MS Vats, Excavations at Harappa
- Kalibangan: Terracotta. S'ivalinga (ASI) http://www.hindunet.org/saraswati/heritage1.pdf

Bindusara =

Asoka =



KOSALA, BHIR-MOUND PATRAHA, GOLAKPUR	PUNCH-MARKED COINS
SWAT, BHIR-MOUND PATRAHA, AURIHAR	"
MAMDAR, MAGADHA BHIR-MOUND, AURIHAR PATRAHA	"
BHIR-MOUND, RAIRH, PATNA	"
AURIHAR, RAJGHAT JAUNPUR, AHRAURA	"
BHIMLI PATAN, NAMBALAM UJJAIN, BAHAL, KOSAM PATRAHA, TAXILA, BHIR-MOUND, THATHARI	"
BHIMALIPATAN, PATRAHA, MAGADHA, BHIR-MOUND, LALGANJ, GOLAKPUR, VEMBAVUR, SINGAVARAN	"
BHIR-MOUND, DHARWAR, PATRAHA, BAHAL, KARIMNAGAR, GULBARGA MAGADHA, SINGAVARANA	"
GULBARGA, PATRAHA, RAIRH, NAGARI FINDS	"

[Tree symbol (often on a platform) on punch-marked coins; a symbol recurring on many tablets with Sarasvati hieroglyhphs]. (After Pl. 30 C in: Savita Sharma, 1990, Early Indian Symbols, Numismatic Evidence, Delhi, Agam Kala Prakashan; cf. Shah, U.P., 1975, *Aspects of Jain Art and Architecture,* p. 77).

[Pl.8, Local Tribal coin symbols: Ujjayini, Tripuri, Ayodhya, Almore, Pa_n~ca_la, Arjuna_yana (1-3), Ra_janya (3,6,8), Uddehika, Audumbara, Kun.inda, Kuluta, Vr.s.n.i, Yaudheya, Ks.atrapa, S'a_tava_hana]

AURIHAR, KOSALA, PAILA. SHAMIWALA, SINGAVARAN	PUNCH-MARKED
AURIHAR, RAWAL PINDI BHIRMOUN, JAUNPUR, RAIRH TEREGNA, KOSALA.	,,
MAGADHA, AURIHAR, SINGAVARAN, JAUNPUR, BESNAGAR, DAILA, JAUNPUR	,,
JAUNPUR, RAIRH, SWAT. MACHUATOLI, THATHARI, AURIHAR, BHIRMOUND HANGRUL	,,
MIRZAPUR, PATRAHA, BHIRMOUND, RAIRH, VEMBAVUR, RAMAN MACHUATOLI, GULBARGA	,,
LALGANJ, AURIHAR, JAHANGIRA, BHILSA. THATHARI, RAWALPINDI, LOTAPUR	,,
LOTAPUR, AURIHAR, SINGAVARAN, PATRAHA MAMBALAM, BHIRMOUND MACHUATOLI	,,
BESNAGAR, MAGADHA, PATARAHA, GOKULVAN, BHIMLIPATAN, BAHAL, TEREGNA, RAIRH.	,,
BESNAGAR, MAGADHA, PATRAHA, GOKULVAN BHIMLIPATAN, BAHAL, MACHUATOLI, JAUNPUR.	,,
AURIHAR, GULBARGA, MAMBALAM, PATRAHA, VEMBAVUR, GORAKHPUR MACHUA TOLI	,,
AHRAURA, PESHAWAR, MAGADHA, BHIRMOUND, SINGAVARAN	,,
ERAN	LOCAL COINS
CENTRAL INDIA UNITED PROVINCES	UNINSCRIBED CAST COINS
KAUSAMBI, MATHURA, UJJAYINI, TANLA, KADA, SIBIS, PAÑCHĀLA	LOCAL - TRIBAL COINS

Taurine symbol [Pl. 35, on punch-marked, local, uninscribed cat coins and local coins]. The symbol is so intense in almost all cultural periods and in a large number of sites that the taurine symbol can be compared with the most frequently occurring sign of the SSVC inscribed objects: the 'rimmed jar with a narrow-neck' (*kan.d.kanka* – copper furnace).

[After Pl. 10 to 13 in: Savita Sharma, 1990, *Early Indian Symbols: Numismatic evidence*, Delhi, Agam Kala Prakashan]



[Pl. 2, N: Sahet-Mahet punch-marked coins symbols]



[Pl. 3, M,N: Singavaran punch-marked coin symbols]



Pl. 5, A to C, Amaravati punch-marked coin symbols]



Pl. 5, D, Punch-marked copper coins, Madhipur]

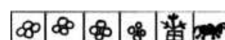


[Pl. 5, E, Uninscribed cast coins]

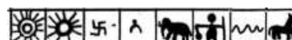


[Pl. 5, F, G, Eran punch-marked local coin symbols]

[Pl.5, J, Ahichhatra, punch-marked local coin symbols]



[Pl.5, K, Kada, punch-marked local coin symbols]



[Pl. 5, L, Kanauj, punch-marked local coin symbols]



[Pl. 5, M, Mathura, punch-marked local coin symbols]

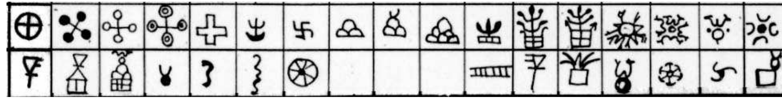


[Pl. 5, N, O, P, Taxila, punch-marked local coin symbols]



[Pl. 6, A, Shamiawala (Lucknow Museum) Uttara Pa_n~ca_la Ahicchatra (Type I) punch-marked coin symbols]

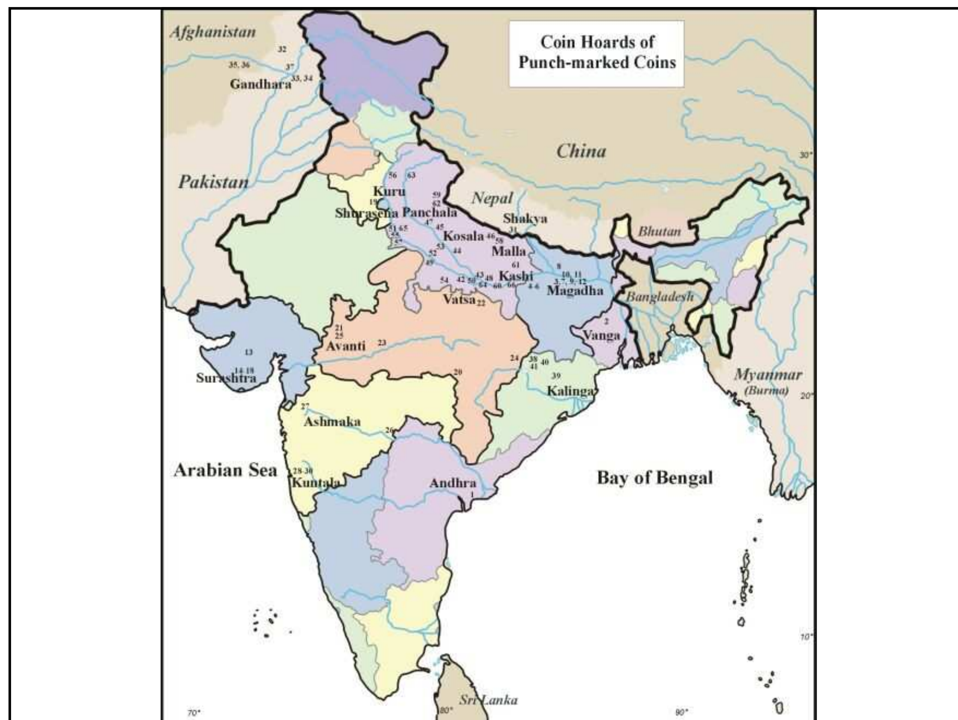




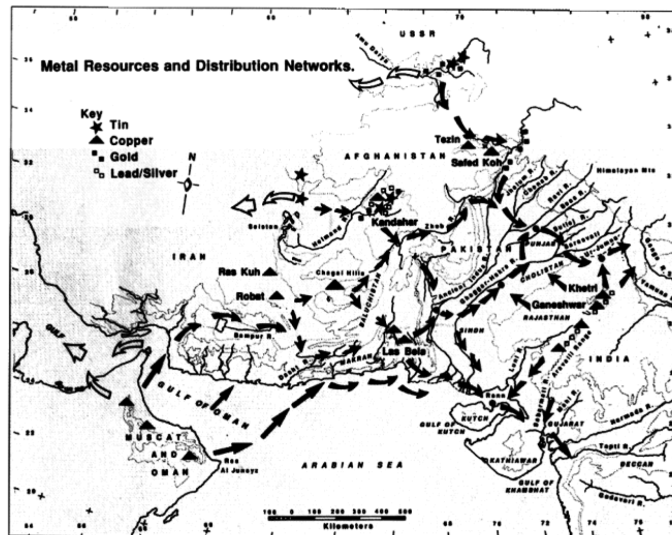
[Pl.4,J to P, Amaravati punch-marked coin symbols]



[Pl. 5, h, I, Kaus'a_mbi_ punch-marked local coin symbols]



Map of Metal Resources and Distribution Networks (After Fig. 5.20f, Kenoyer, 1998)



Over 45 sites where objects with epigraphs have been discovered



BHARATAM JANAM

- R.gveda (ṛca 3.53.12) uses the term, 'bhāratam janam
- ', which can be interpreted as 'bhārata folk'. The ṛṣi of the sūkta is viśvāmitra gāthina. India was called Bhāratavarṣa after the king Bharata. (Vāyu 33, 51-2; Bd. 2,14,60-2; lin:ga 1,47,20,24; Viṣṇu 2,1,28,32).

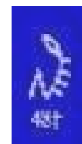
ya ime rodasī ubhe aham indram atuṣṭavam
viśvāmitrasya rakṣati brahmedam bhāratam janam

- 3.053.12 I have made Indra glorified by these two, heaven and earth, and this prayer of viśvāmitra protects the people of Bharata. [Made Indra glorified: indram atuṣṭavam -- the verb is the third preterite of the casual, I have caused to be praised; it may mean: I praise Indra, abiding between heaven and earth, i.e. in the firmament].

Bharatiyo

- Areas for further research: it is no coincidence that the term **bharatiyo** means ‘caster of metals’ (G.)
- Further linguistic studies to reconstruct the Proto-Bharatiya *parole* (spoken idiom, vernacular) should relate to the work of *s’ren.i* (18 guilds are mentioned in Ja_taka-s) and links with megalithic cultures.
- Further archaeological explorations in Sarasvati river basin and metallurgical analysis is likely to reveal the early presence of iron-work and experimentation with alloys in Bharat.
- Sociological studies related to **Bhāratam Janam** (R.gveda) and **Pān~cāla** (five artisans = **Pan~cakammāl.ar**) will establish the pan-bharatiya presence of the *vis’vakarma* and *vra_tya* tradition (together with *yajn~a* and *yoga*), also exemplified by *s’aiva a_gama*, all dating back to not later than 5000 years Before Present.
- Knowledge systems of Bharat exemplified by Vedic, *itihāsa* and *purāṇa* texts will provide the framework for inter-relating archaeology, tradition and cultural continuum in puṇyabhūmi Bharat. This calls for a multi-disciplinary approach to the study of Bharatiya culture, based on Bharatiya ethos and *kāla gaṇana* using planetaria software to authenticate the astronomical references in these texts. Such an approach will result in national resurgence consistent with the tradition which postulates study of *itihāsa* to achieve *dharma, artha, kāma and mokṣa.*

Bhart, baran -- an alloy



bharatiyo = a caster of metals; a brazier; bharatar, bharatal, bharataḷ = moulded; an article made in a mould; bharata = casting metals in moulds; bharavum = to fill in; to put in; to pour into (G.lex.) **bhart** = a mixed metal of copper and lead; bhart-īyā = a barzier, worker in metal; bhat., bhrāṣṭra = oven, furnace (Skt.) bharata = a factitious metal compounded of copper, pewter, tin (M.)

Implications for language studies

- Language X and borrowings from proto-Munda can be identified in over 25 ancient languages of India. (Indian Lexicon exists with 8000 semantic clusters for these languages). http://sites.google.com/site/kalyan97
- The formation and evolution of Language X and differentiation into Prakrits, Pali and other languages of India need to be studied through isoglosses of the linguistic area.
- The decoding of Sarasvati hieroglyphs establishes the essential cultural continuum of the civilization which was nurtured, principally, on the banks of Vedic River Sarasvati. The continuum is evidenced in language and also in many cultural markers.